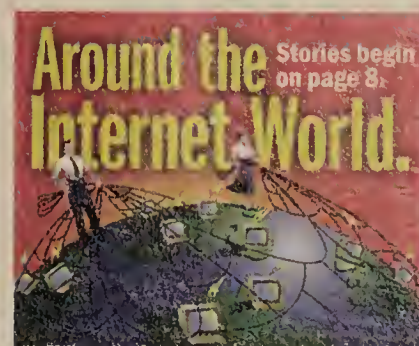


# NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



## INTRA Net

A Network World Supplement

# Moving to a Million

How to cope with escalating page counts

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- CGI still gets the job done
- Handbook: Dynamic HTML
- Review: Netiva Software's database development tool

**BEGINS AFTER PAGE 34.**

# Nokia catches a falling Ipsilon

*Finnish manufacturer snags IP switching instigator.*

By Jim Duffy  
Sunnyvale, Calif.

A year ago, they were the Beatles.

When Ipsilon Networks, Inc. touched down in March 1996, it whipped the industry into a frenzy with its hooky melodies and breezy harmonies about IP switching. Ipsilon's chart-busters included tunes on establishing cut-through IP routes over ATM, snubbing complex routing dogma from standards groups and divorcing enterprise nets from the self-centered Cisco Systems, Inc.

The industry was transformed into a screaming, blubbing mess, tearing its locks out while pleading for more, more IP switching.

But that was yesterday. Today, Ipsilon is but a nostalgic footnote, another victim of industry consolidation. The IP switching pioneer last week was scooped up by Finnish telecommunications equipment manufacturer Nokia Corp. for what seems a paltry \$120 million given the commotion it caused.

The deal will let Nokia develop new IP-based network equipment for voice and data, the company said. Nokia last June acquired a minority stake in Ipsilon, and the companies had been collaborating on IP switching and ATM product development.

Ipsilon generated a lot of hype but, unlike the Beatles, not a lot of sales. For all of the swagger, See Ipsilon, page 64

### MORE M&A NEWS

## Why is this man smiling?

Lucent snaps up Gigabit Ethernet vendor Prominet, to Menachem Abraham's delight. Page 15.

# The age of being reasonable

*Survey finds bottom-line concerns win out over hot technologies such as ATM and Gigabit Ethernet.*

By Arielle Emmett

Network managers have become risk-averse and careful with their cash. Managers aren't willing to invest in bleeding-edge technology or even bandwidth at commodity prices, especially when the business case can't justify the costs.

That's the gist of the 1997 Network World/Deloitte & Touche Consulting Group Technology Planning Survey, a series of 300 in-depth interviews with strategic network planners in the nation's commercial, government and educational institutions. The annual survey cuts through the hype to take the pulse of Network World readers from organizations such as manufacturers, community colleges, banks, utilities, systems integrators and computer vendors.

See Survey, page 47

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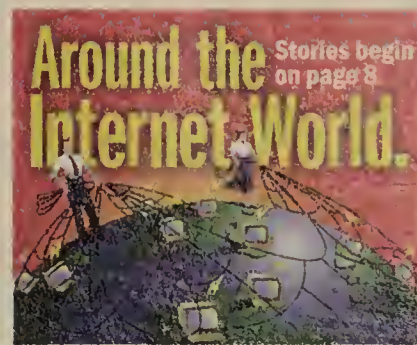


NEWBRIDGE



# NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



## Carriers fall behind e-commerce curve

*MCI struggles to deliver on commerce promises.*

By David Rohde

Perched in front of a PC late at night, you relish the opportunity to search for and purchase goods over the World Wide Web. There are a range of products available, and it is easy and convenient. But what happens when questions about size, availability or color arise?

The answer promised by many carriers — the ability to establish a voice call to the proprietor in the middle of a Web session and have him hyperlink along with

you — is still a dream.

As 1997 closes, the Big Three long-distance carriers still are dabbled around the edges of Internet/call center integration. And those that have hyped it the most have the least to show.

Perhaps further along than any company is AT&T, which earlier this year introduced its interactiveAnswers Service. The offering enables Web surfers to click on a button to reach a call center agent. The main draw-

*See Carriers, page 66*

## Teenage hacker tells his side of Land Attack story

By Ellen Messmer

Montreal

It was "Meltman" who wrote Land Attack, the denial-of-service attack code that has been blowing up routers, servers and desktop computers since it was posted on the Internet right before Thanksgiving.

Technicians at Cisco Systems, Inc., like many others in the network industry, have been busy coping with the fallout from Land Attack and would love to get their

hands on the havoc-wreaking Meltman. But despite his ominous moniker, in reality Meltman is a 16-year-old Montreal high-school student named Hugo Breton. And though Breton does have regrets about releasing his land.c code to the public, he warned that there are bound to be more such bombshells until the network industry gets a lot smarter about security.

"Network equipment should

*See Meltman, page 64*

**online**

- A copy of the actual code
- Patches from Cisco and Microsoft
- A paper about similar attacks

www.nwffusion.com

## Microsoft dealt browser blow

By Christine Burns and Andy Eddy

Washington, D.C.

Department of Justice: 1, Microsoft Corp.: 0.

That is the tally after a U.S. District Court judge handed down a preliminary ruling last week that prohibits the software giant from forcing computer manufacturers to load a copy

of Internet Explorer onto every Windows 95 PC.

The 19-page order stands until May 31, 1998, when a special counsel will report further evidence in the case. According to the order, the restriction applies to any successive version of Windows 95, at least for the time being.

*See Justice Dept., page 65*

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*See Ipsilon, page 64*

**MORE M&A NEWS**

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## The age of being reasonable

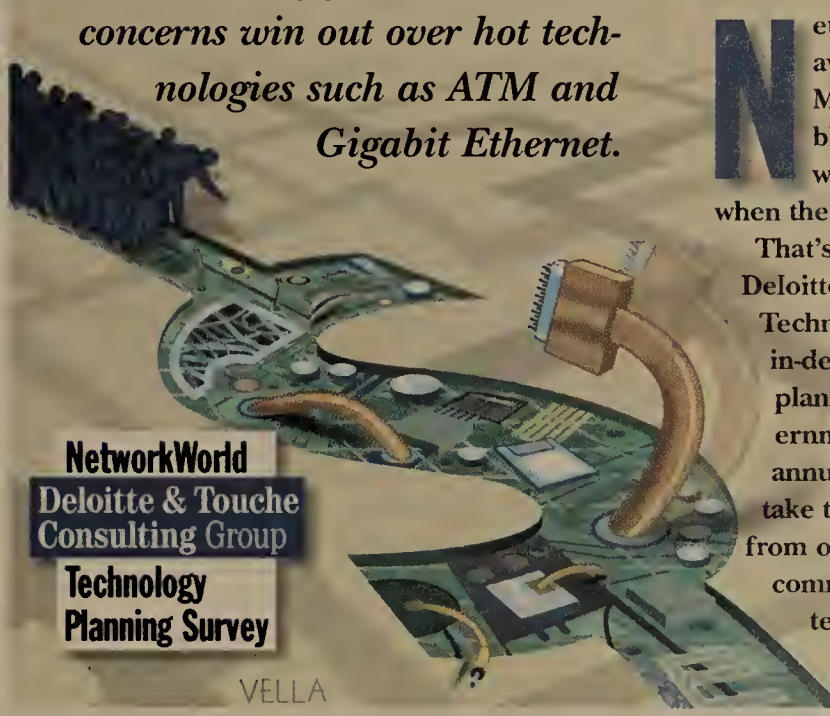
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*See Survey, page 47*



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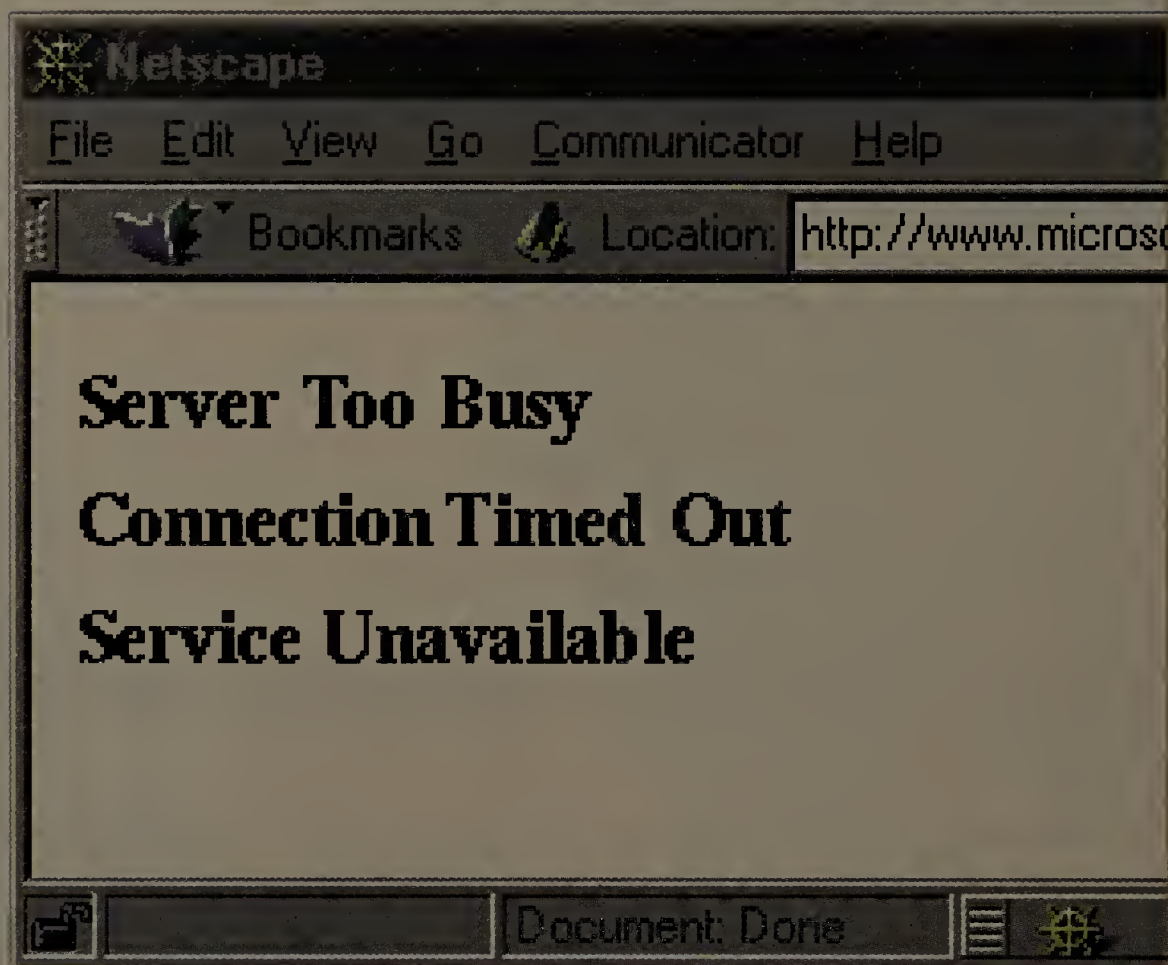
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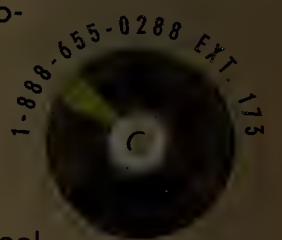
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cations and databases. ClusterCATS tracks server  
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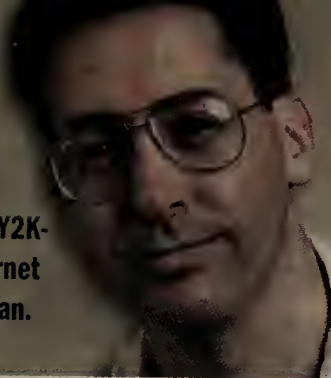
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## Y2K E-MAIL GEAR FEAR

Most e-mail packages will be Y2K-compliant soon, says the Internet Mail Consortium's Paul Hoffman. Page 40.



## DIRECTORY DEN

The Cisco and Microsoft sponsored Directory Enabled Network (DEN) needs users to help get the spec on track. Page 45.



## WEB STRAINER

VP Al Gore applauds industry moves to filter out sex, lies and other bad stuff to "childproof" the 'Net. Page 35.



## FIND IT FUSION

To quickly get to any online info referenced in *Network World*, enter its DocFinder number in the input box on the home page.



**NetworkWorld Fusion**  
www.nwfusion.com

### This Week

#### Only on Fusion

**Virtual private networks.** Our newest audio primer will give you a quick feel for VPNs. Listen to and watch a 5-minute explanation of the hows and whys of using the Internet as a WAN. Then follow our extensive hyperlinks to get more detailed info on the technologies involved. **DocFinder: 5122.**



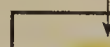
**Keeping Current.** Some financial analysts are writing off DSL as DOA. Fred McClimans asks: What do they know? Look for some fairly ambitious rollouts in 1998, he writes. **DocFinder: 5123**

**Question of the week.** A user is moving his department from Macintosh to Win 95 on the desktop. He wants to replicate the Mac's file-sharing abilities and has been able to do so — except for one stubborn machine that refuses to admit it's part of the Network Neighborhood. Any suggestions? **DocFinder: 5125**

**Build a face-off.** *Network World* sponsors a series of industry face-offs in which you can hear opposing sides of key networking battles. Help us decide a topic for the face-off at NetWorld+Interop '98 in Las Vegas next May — we've put up a questionnaire on which you can check off the issue you're most interested in. **DocFinder: 5124**

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### THE AGE OF BEING REASONABLE:

*Our annual Technology Planning Survey finds that strategic network planners are a cautious lot. Page 1.*

**REVIEW:** *Octel Unified Messenger fulfills the universal in-box promise, keeping you in touch by phone or PC. Page 51.*

VELLA

ILLUSTRATION BY RAY VELLA



## News briefs, December 15, 1997

**Oracle looks to the 'Net**

■ Oracle Corp. unleashed a pack of Internet-focused products at last week's Internet World/Fall '97. Oracle Application Server 4.0 (formerly called WebApplication Server) will start beta testing in January and ship by April. Key new features are a full Common Object Request Broker Architecture (CORBA) 2.0 object request broker and support for the CORBA Internet Inter-ORB Protocol (IIOP) communications protocol. Also starting beta tests is Oracle's Java Integrated Development tool set based on the J-Builder product licensed from Borland International, Inc. Oracle has added support for JavaBeans, JSQL and CORBA objects. The as-yet-unnamed product also will ship by April. Pricing for both will be announced later.

**Microsoft and Ameritech team up for DSL services**

■ Ameritech Corp. is teaming up with Microsoft Corp. to make digital subscriber line (DSL) services easier to deliver. Microsoft last week said it is working on software to ease the installation of DSL modems for high-speed Internet access. Both companies said they are working to get unnamed PC vendors to include DSL modems in their PCs. At the same time, Ameritech announced it is offering Ameritech.net High Speed Internet Service, a 1.5M bit/sec download asymmetric DSL Internet access service in the Ann Arbor, Mich. area. The service will expand to Royal Oak, Mich. and Chicago by mid-1998.

**Cisco and HP team to secure 'Net transactions**

■ Cisco Systems, Inc. and Hewlett-Packard Co. last week announced a package of Internet applications, a firewall and a network infrastructure which when combined are designed to boost security for companies doing business online. Cisco's and HP's Secure Web Transaction Solution (SWTS) is a combination of the companies' existing products, including HP's VirtualVault operating system and Cisco's Pix Firewall and LocalDirector traffic manager, which balances TCP/IP traffic across multiple HP servers.

The VirtualVault operating system specifically is designed to provide security for Web-enabled applications and databases. The Pix Firewall is platform-independent software that runs on a rack-mounted PC, and LocalDirector is designed to ensure timely access and response to server requests as well as fail-safe operation if the server fails. SWTS is available now in six configurations, and pricing starts at \$164,646.

**It's raining MS servers**

■ Microsoft Corp. last week announced a new BackOffice bundle which is a compilation of new and upgraded NT application products the company announced this year. The package includes NT 4.0; a Windows NT Option Pack that includes Internet Information Server 4.0, Microsoft Transaction Server 2.0, and Microsoft Message Queue Server, Certificate Server and Index Server; Microsoft Front Page 98 for Web site creation; Exchange Server 5.5; Proxy Server 2.0; SNA Server 4.0; SQL Server 6.5; and Systems Management Server 1.2. Site Server 3.0, Microsoft's yet to be released updated electronic commerce product, will be part of the package when it is available next year. BackOffice 4.0 will be available in January. Pricing starts at \$2,499 for the server suite license and \$1,309 for a five-client access license.

**AT&T WorldNet packages dial access**

■ AT&T WorldNet is further expanding its Internet access services for business customers. At Internet World/Fall '97, AT&T WorldNet rolled out its Business Dial Services, which are designed for users at businesses that need more than just Internet access. The services include a dial-up account, a Post Office Protocol 3 e-mail account with 10M bytes of memory, a Microsoft Corp. or Netscape Communications Corp. browser, 24-by-seven "business class" technical support and 800/888 dial access, for \$24.95 per month.

# HP plans big event for OpenView 6.0

*New event correlation software subverts NerveCenter, SMARTS.*

By Jim Duffy

Fort Collins, Colo.

The next major release of Hewlett-Packard Co.'s OpenView will include a feature that some users fear could limit their management application choices and pit HP against some of its third-party developers.

OpenView Network Node Manager (NNM) 6.0, due next summer, will sport Event Correlation Services (ECS) software. The software allows users to quickly pinpoint network faults by defining rules for associating network events. Event correlation is needed in large networks where many events, or event "storms," can obscure the root cause of network faults.

For the past three years, HP has recommended Seagate Software, Inc.'s NerveCenter product for correlating NNM events. NerveCenter is used by roughly 40% of "major" OpenView accounts, said Jeff Barker, NerveCenter product manager at Seagate. Major accounts are those with 500 to 1,000 network elements or more, Barker said.

But HP claims ECS was demanded by OpenView users who want an inexpensive, tightly integrated correlation engine. ECS will be made up of three components (see graphic). It will let users define and validate correlation rules, process events based on the rules and deploy out-of-the-box correlation for common events.

ECS Designer, a configuration and customization graphical user interface, will cost \$15,000, HP said, while a runtime component with preconfigured logic will be bundled free with NNM 6.0. NerveCenter also costs \$15,000, while InCharge Fault Manager, an event correlator from System Management ARTS, Inc. (SMARTS), costs \$25,000.

But HP claims ECS will be more tightly integrated with NNM than third-party products such as NerveCenter and InCharge Fault Manager. For example, ECS will automatically update NNM's topology database, which is something third-party products cannot do, said Lawrence Mauch, event correlation technical lead in HP's OpenView Software Division.

Users, though, think HP's release of ECS could limit their choice of correlators.

"Is their intent to say, 'OK, we don't need things like NerveCenter and SMARTS anymore?' Or are they doing a piece of correlation that they still intend on

[ECS]," said Fred Reimer, senior technical consultant at HBO & Company in Atlanta. "It pretty much looks like it could replace third-party applications." Indeed it can. But HP will still give NNM 6.0 customers a choice of correlators, Mauch said.

"We will do absolutely nothing to prevent SMARTS and NerveCenter from operating as [they do] now," he said. "We will not do anything to break their integration."

That's encouraging to Seagate's Barker, as is HP's entry into the event correlation market. Though Seagate's partner is now its competitor, Barker does not believe business ties with HP will be strained.

"I'm sure there are instances where ECS will compete with NerveCenter, but I think this will broaden the market for event correlation," Barker said.

As far as competition, SMARTS thinks its InCharge Fault Manager for OpenView will leave ECS in the dust, said Bill Leavy, SMARTS' vice president of marketing. ■

**THE BIG EVENT**

Components of HP OpenView's Event Correlation Services:

- ECS Designer  
A GUI for configuring and simulating correlation logic.
- ECS Engine  
A run-time event subsystem that processes event streams according to logic.
- Out-of-box logic  
Predefined correlation logic for the most common events.

fusing [with] those other products?" asked Jerald Murphy, director of network management at RPM Consulting, Inc., of Princeton, N.J.

"We're evaluating NerveCenter and SMARTS [but] we're kind of iffy about going with either one because of the fact that HP is going to be integrating

## HP bolsters app, Web management

Hewlett-Packard Co. last week announced a series of enhancements to its OpenView network management system designed to bolster application and Web-based management.

Many of the enhancements fill out or formalize plans announced last summer by HP at the OpenView Forum conference to broaden the scope of OpenView.

For application management, HP unveiled the HP OpenView SMART Plug-Ins program. HP OpenView SMART Plug-Ins are integrated, preconfigured software packages that "plug in to" the HP OpenView platform and provide centralized monitoring and control of applications and databases.

Currently, HP offers plug-ins for SAP R/3, and Oracle Corp. and Informix Software, Inc. databases. Next year, HP will add Baan Co. software; Microsoft SQL Server, Exchange and Commercial Internet System; Netscape Communications Corp.'s SuiteSpot and Remedy Corp.'s Action Request System.

For Web-based management, HP and Cisco Systems, Inc. will integrate Cisco's Resource Manager Web user interface and management device inventory data with HP OpenView network management products. This will allow OpenView users to centrally manage Cisco devices from a Web interface.

HP also has integrated its Network Node Manager with firewall products from Cisco, Lucent Technologies, Inc. and Secure Computing Corp. (see News briefs, left).

In addition, HP recruited Netscape into its OpenView-Ready program. Under this program, Netscape will bundle HP's OpenView IT/Operations Special Edition agents with its SuiteSpot servers. This will enable OpenView users to access OpenView's IT/Operation message browser from a Java user interface. HP already bundles Netscape SuiteSpot with OpenView as part of its Domain Business Suite offering.

— Jim Duffy



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# Sun, NetApp check into Web caching

Hardware products are pitched as essential network additions.



By Andy Eddy

Sun Microsystems, Inc. and Network Appliance, Inc. at Internet World/Fall '97 last week announced caching hardware products.

The concept of adding a cache server to an enterprise network is one that is growing in popularity. The idea is to take the load off the main Web server and thereby reduce bandwidth demands on the entire enterprise. Sitting between the primary content server and the

client, most of the hits will be transparently taken by the cache server, leaving the rest of the enterprise less affected by the traffic.

Sun's Netra Proxy Cache Server is targeted at Internet service providers and global enterprises.

Studies being completed by Sun indicate that a cache server is less expensive than simply increasing bandwidth. "A cache server at a 20% hit rate pays for itself compared to adding more bandwidth, and we find that most cache servers actually have

over a 40% hit rate," said Shiva Mandalam, a product marketing manager at Sun. The Netra Proxy Cache Server will be available in January, with prices starting at \$13,995.

Network Appliance's NetCache Appliance is a mix of hardware and software that offers enterprise networks plenty of flexibility in configuration, company officials claimed. In fact, one of the benefits of NetCache is the custom operating system fits on a floppy, so it is extremely

simple and efficient.

NetCache can be used simply to speed up access or can be configured to provide various levels of security.



Network Appliance's NetCache server is being termed a "thin server" by industry analysts, with an OS that fits on a floppy.

For example, the server can be set up — from any browser — to block certain people from specific parts of a site.

However, sheer speed of access is what Network Appliance is concentrating on.

"Our product serves pages in a response time of one to 10 milliseconds, which is 10 to 100 times faster than other companies' products today," claimed Ed Chow, product manager for Internet products at Network Appliance.

NetCache comes in two configurations. The C230 starts at \$16,550 and is geared toward small to midsize companies. The C630, which starts at \$65,720, is aimed at corporate or ISP data centers.

© Sun: (650) 786-7737; Network Appliance: (408) 367-3000

## Sun's Activator a potent weapon in Java war



By Chris Nemej

New York

Sun Microsystems, Inc. last week unveiled a product that overcomes Java incompatibility problems in any browser — a move viewed by many observers as a brilliant ploy to neutralize Microsoft Corp.'s attempts to limit the spread of Java.

And just as Sun's filing of its lawsuit against Microsoft in October — following the release of Internet Explorer 4.0 — carried with it a whiff of desperation, so too did the quotes emanating from Redmond, Wash., last week.

One Microsoft spokesman hinted darkly that the new product, Activator, would search out and alter code in a user's machine that doesn't conform to Sun's idea of Java.

Not so, said Alan Baratz, presi-

dent of Sun's JavaSoft division. Baratz said Activator is a downloadable applet that checks a user's machine to see if the browser has the latest Java Virtual Machine (JVM) needed to run Java applications. If it does not, Activator lets users download the JVM, which then resides on the client.

The Activator announcement — one of a number made by Sun at Internet World/Fall '97 — appears to have caught Microsoft and everyone else by surprise (see graphic).

It also comes at a crucial time: Developer confidence in Sun's ability to deliver on Java's cross-platform promise has been shaken by Microsoft's aggressive countermeasures.

But Activator is more than a new weapon for Sun in its Java war with Microsoft. Internet Explorer 4.0 is just one of many browsers that does not fully sup-

port Java. Navigator browsers made by Sun partner Netscape Communications Corp. also are not fully Java compatible.

This creates a huge dilemma for companies such as Extensity, Inc., a start-up preparing next quarter to unveil its first product,

a Web-based automated expense report form.

Extensity CEO Sharam Sas-son said his Emeryville, Calif.-based company has customers with large installed bases of Navigator 3.0. These customers "need to be able to use the latest Java Development Kit, yet don't want to download and install new browsers on hundreds of desk-

tops," he said.

One analyst said Activator has larger implications.

"This kind of software that keeps itself up-to-date — self-healing software, if you will — is the future," said Jeff Kinz, an analyst at Framingham, Mass.-based market research firm International Data Corp. ■

### Other Internet World announcements made by Sun

#### From the JavaSoft division:

- Java Platform Roadmap: Outlines release schedule for Java Development Kit, Java Foundation Classes and HotSpot.
- Enterprise JavaBeans specification: Defines API for components allowing developers to build server-side Java applications.

#### From Sun's network software group:

- Sun Bandwidth Allocator 1.0: Enables service providers to manage network traffic flow and application performance. Available now for the Solaris operating system and SPARC- or Intel-based hardware platforms for \$4,995.
- Solstice Enterprise Manager 2.1: New version of network management software promises Year 2000 compliance and object-level security. Available this month starting at \$20,500.
- Java Dynamic Management Kit: Designed for enterprises to build self-managing networks. Available in January for \$5,995.

## Reporter's notebook

By Network World staff

New York

This year's Internet World/Fall '97 featured many familiar staples of the annual trade show: lots of announcements and free stuff and plenty of Californians complaining about the cold weather. Things were plenty hot around the CompuServe Corp. booth, however. The Internet access giant drew a steady crowd of attendees hoping to win a new Corvette.

For those seeking relief from frayed trade show nerves, massages were available from an outfit called U.S. Bodyworks, and PSINet, Inc. offered soothing sounds from a jazz duo camped out by the access provider's booth.



### Serious business

On top of booking musicians and giving away cars, Internet service providers were particularly busy at the show. Among the major ISP announcements were:

- MCI Communications Corp. unveiled its internetMCI VPN service, which supports secure Internet access from 50 countries.
- TCG CERFnet announced its Enterprise-Quality VPN Service. The service offers users a fully

managed dedicated network service with some of the highest security features available today.

### Cindy who?

Call them the digirazzi.

Oracle Corp. CEO Larry Ellison was so overwhelmed Wednesday by the flash photo-graphy at his keynote that he stopped his speech and posed for the cameras. Thinking that would satisfy the normally subdued flock, he continued on.

When the snapping again reached a frenzy, Ellison said, "I could understand if I were Cindy Crawford..."

### Spam magnate, lawyer magnet

Sanford Wallace, the well-known spam king, made an appearance at Internet World long enough to get himself in trouble all over again.

Boasting that his junk e-mail distribution company is defending itself against its 12th lawsuit, Wallace said Cyber Promotions, Inc., "is redefining the way lawyers do business over the Internet."

But at Wednesday's session on spam when he was challenged to justify the problems junk e-mail causes network administrators by clogging servers, Wallace said, "They're network administrators. This is what they do."



# Microsoft gains XML allies

Web format for structured data built into products.



By Scott Lajoie  
New York

Microsoft Corp. furthered its campaign to make Extensible Markup Language (XML) an industry standard for advanced Web markup languages by announcing partnerships with authoring and database management software companies here at Internet World/Fall '97.

XML is a subset of the long-established Standard Generalized Markup Language. XML provides a standard for formatting Web data and can be used to encode a document, record, object, link or user interface.



People flocked around the Microsoft booth at Internet World to get more information on XML.

The XML approach also promises to make structured data easier to reuse. The way you schedule an appointment and link it to a billing record, for instance, can be used for a restaurant or a veterinarian's office.

At the present time, Microsoft Internet Explorer 4.0 is the only Web browser that has begun to support XML. Netscape Communications Corp. has plans to support the language in its 1998 version of Navigator.

With a little prodding from Microsoft, last week the third parties came out in droves at Internet World.

Authoring software vendor ArborText, Inc. showed its XML-compatible AdeptEditor on the exhibition floor. ArborText and Inso Corp. demonstrated tools that let developers build user interfaces from XML data.

Chrystal Software also joined the XML parade, showing off its Astoria Navigator, an XML-ready database management tool.

"Astoria Navigator allows one to push information to the Web quickly and efficiently," said Kari Johnson, director of marketing at Chrystal Software.

Allaire Corp., Sybase Corp., Expertelligence, Inc., and SoftQuad, Inc. all stated their intent to deliver XML tools in part-

nership with Microsoft by March 1998.

It wasn't just vendors that sang XML's praises. Two huge industry coalitions — the Society of Automotive Engineers and the Telecommunications Forum — have committed to delivering information from their vast databases to the World Wide Web using XML.

The announcements come on the

heels of the World Wide Web Consortium's (W3C) decision last week to recommend that XML be adopted as an industry standard.

The W3C working group, made up of 14 companies, including Microsoft, Sun Microsystems, Inc., Hewlett-Packard Co. and Netscape, designed XML. ■

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# ISPs focus on Web hosting services



By Denise Pappalardo  
New York

Web hosting services are not just for simple Web sites anymore.

PSINet, Inc., UUNET Technologies, Inc. and IBM Global Services last week announced enhancements to their Web hosting offerings, including options that range from Web broadcasting to beefed up Web server farms capable of handling high-volume traffic.

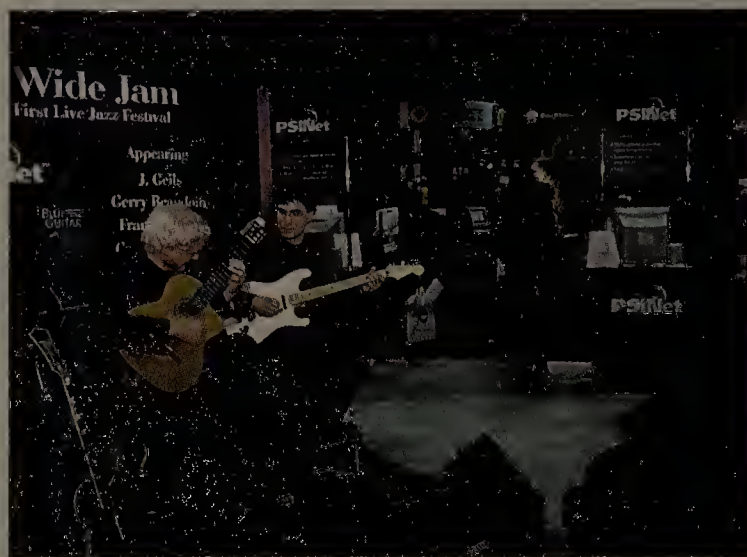
Web hosting combined with broadcasting technology can be useful for customer support and training applications for business users, said Rebecca Wetzel, director of Internet services at TeleChoice, Inc., a Verona, N.J.-based consulting firm.

With an eye toward support-

ing new broadcast applications, PSINet introduced PSI-Web Multimedia Hosting services, including TV onthe Web Live, PSIWeb Media, PSI-WebStream and Audio and Video Production Services.

PSINet now has teamed with Grady McGrath International, Inc. to offer customers real production support for live events with TV onthe Web Live, said Michael Mael, vice president of applications and Web services at PSINet. With this service, for example, business users can host live commercials or their CEO's year-end speech, he said.

While TV onthe Web Live is a high-end service, with rates ranging from \$8,000 to \$10,000 per



PSINet's booth at Internet World offered a jazz duo to entertain attendees.

event, PSINet's two other services may be a better starting point for typical business users.

PSIWebMedia combines Web hosting and the distribution or broadcasting of multimedia traffic across the Internet.

PSIWebStream includes Web hosting, but not broadcasting. Instead, this service is geared toward users who simply want to host multimedia content for on-demand access.

PSINet's new Audio and Video Production Services is a professional digital audio and video conversion service.

All of the multimedia services are based on RealNetworks, Inc.'s RealSystem 5.0 streaming software, Mael said.

UUNET also is using RealNetworks' technology, along with Microsoft Corp.'s NetShow 2.0 server software, to support its latest enhancements.

UUNET now is offering its Web hosting customers on-demand and broadcasting capabilities. The Internet service provider earlier this year announced its on-demand service called UUCast.

Where PSINet and UUNET added applications to their Web hosting services, IBM Global Services added girth.

Global Services, IBM's ISF arm, enhanced its dedicated Web hosting services by offering customers a choice of three server environments.

These include Microsoft's Internet Information Server (IIS), Netscape Communications Corp.'s Enterprise Server on NT or a Unix server running Netscape's Enterprise Server.

Previously, IBM did not support Microsoft's IIS, said Nancy Faigen, vice president of IBM Global Web Solutions.

In addition to adding a new server option, IBM announced it will upgrade all eight of its Web server farms with IBM 8274 virtual LAN switches.

This will let IBM easily add more bandwidth or additional servers for customers with high traffic patterns, Faigen said. ■

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## Netective probes security holes

Software can check out firewalls and operating systems.



By Ellen Messmer  
Boston

Start-up Netect, Inc. next month will ship Netective, software that can scan firewalls and internal operating systems to check for security vulnerabilities and evidence of hacker intrusions.

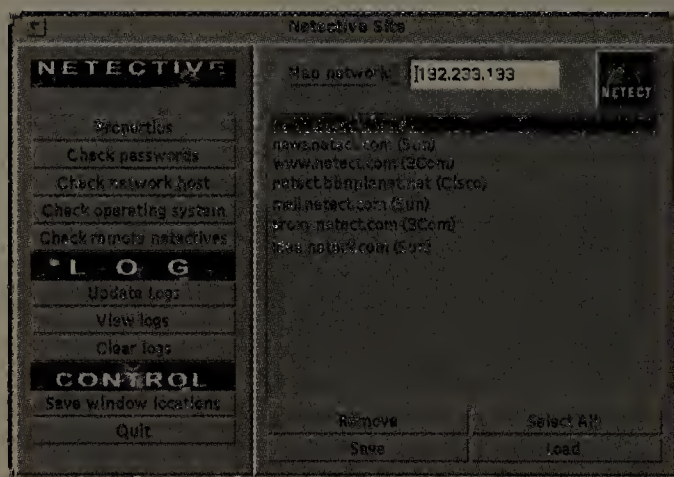
Based on Sun Microsystems, Inc.'s Solaris operating system, Netective will be licensed to corporations based on the number of servers, firewalls or desktops the company wants to monitor.

A single-server version of Netective with a management console will start at \$495. Netective Site, which has a management station to monitor up to 10 IP-based devices, will start at \$1,495.

According to Paula Berman, Netect vice president of corporate marketing, the company will require a license based on the user's aggregated number of IP addresses, but the exact pricing model has not yet been determined.

Fidelity Investments Corp., which has been beta-testing Netective, finds it is easy to use

the software to check for security holes on the 86 online banking



Netective's operating system and firewall checks give administrators the ability to protect an entire site from internal and external threats.

Web servers the bank has behind a firewall.

Netective's interface is simple enough that systems administrators, rather than security specialists, should be able to use it, said Joe Judge, manager of Fidelity's design architecture group for firewalls.

When Netective spots a security breach or vulnerability, the person in charge of security is notified and given suggestions for solving the problem.

If a patch is all that is needed, Netective points to the place on the Internet where it can be obtained, if the patch is not already part of the Netective CD-ROM.

### Battling with ISS

Netect clearly is out to give Internet Security Systems, Inc. (ISS), its primary competitor, a run for the money.

ISS ships separate products for operating systems scans and firewall monitoring, while Netect, which does its design work at labs in Israel, has one product to serve both functions. "The more complete a product I have, the easier my life is," Judge said.

ISS is not sitting back, though, and this week expects to have a new version of its product, which will include better reporting capabilities.

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# User groups push FCC for lower rates

*Retailers and others demand fast action and big cuts in local exchange carrier access charges.*

By David Rohde  
Washington, D.C.

Several user groups last week asked the Federal Communications Commission to immediately lower what they call the inflated access rates charged by local exchange carriers.

The groups filed a petition asking the FCC to do what it so far has refused to do in years of debate over telecom reform: Order regional Bell operating companies to lower access rates to the price of providing access—and no more.

The principal business user groups filing the petition included the International Communications Association (ICA), an association of about 400 companies spending more than \$1 million per year on network services, and the National Retail Federation (NRF). The Consumer Federation of America also signed the petition.

Access rates are the fees charged by RBOCs and other local carriers on either end of a dial-up connection. The fees are charged to long-distance carriers; carriers in turn pass them along in their rates to users. Access rates currently average 2.5 cents per minute on either end of a call. Some economists estimate the actual cost of providing access to be about 0.5 cents per minute.

Many corporate users avoid switched access charges by purchasing dedicated access lines to their long-distance carriers' central offices. But Cathy Hotka, vice president for information technology at the NRF, said switched access charges are a particular problem for her members.

The charges are a problem because many stores use dial-up lines for transaction-related traffic, such as credit card verification, she said. Most large business in other industries also have small branch offices that do not generate enough traffic to justify a dedicated access line.

## Failure a virtue?

Paradoxically, the user groups' strategy is to use the evident failure of the Telecommunications Act of 1996 to produce broad-based local competition as a club to demand the access rate cuts.

The FCC last May ordered a relatively small reduction in access rates for the coming year, with a schedule of further reductions for the following four years.

At the time, the FCC said it hoped that emerging local competition would force RBOCs to lower their rates more than the government ordered, as users fled to the RBOCs' competitors.

But the FCC added that it could revisit the matter if local competition stalled and threatened to order deeper cuts on its own. Today's petition calls on the FCC to do just that.

The petition is certain to draw opposi-

tion from RBOCs. "We've done our part," said BellSouth Corp. spokesman Bill McCloskey. "BellSouth has reduced

access charges by 19% since 1991."

Advocates for the petition said they hope the FCC can dispense with the usual

time-consuming process of gathering comments and financial data before acting because it already has studied access charges to a fare-thee-well.

"Normally a petition for rulemaking takes a long time," conceded ICA general counsel Brian Moir. "But they already have a complete record on access rates. This could be decided by February." ■

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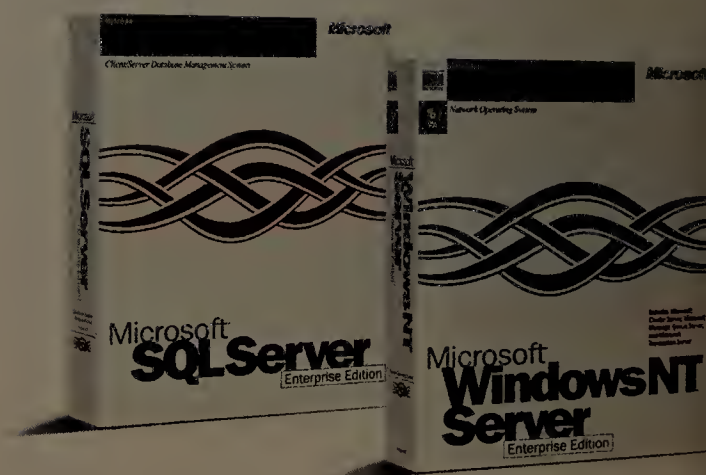
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# Eudora to enter free e-mail fray



By Paul McNamara  
New York

The Eudora division of Qualcomm, Inc. last week planted the newest flag in the increasingly crowded marketplace for providing free Web-based e-mail services.

Known foremost in messaging circles for its Eudora Pro e-mail client software, Qualcomm announced at last week's Internet World/Fall '97 trade show that it will launch Eudora Web-Mail ([www.eudoramail.com](http://www.eudoramail.com)) on Jan. 1.

Eudora Web-Mail, based on technology from WhoWhere, Inc., of Mountain View, Calif., will join the likes of Hotmail, NetAddress, RocketMail and Juno in offering subscribers basic e-mail functionality at no direct cost. Users do need to pay for Internet service provider accounts, except in the case of

Juno, which offers dial-up modem access to 400 e-mail server sites nationwide.

"[The announcement] certainly means that the free-mail market is heating up," said Rob Enderle, an analyst at Giga Information Group, in Santa Clara, Calif.

A number of established companies recently have branched out into free-mail services, including America Online and search engine companies Yahoo and Excite. In addition, there have been rumblings that Hotmail may be an acquisition target of Microsoft Corp.

The launch of Eudora Web-Mail may be a necessary defensive move by Qualcomm, but it presents the possibility of cutting into sales of the division's full-featured client, Eudora Pro.

"It possibly could shift sales from one side to the other, but as long as the revenue stays within [Eudora], I'm not too sure they

should care," Enderle said.

Free-mail sites are supported by advertising revenue, a business model that may become problematic for smaller opera-

tions as the marketplace expands.

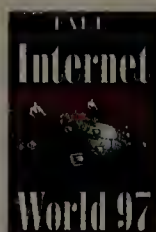
"Long-term, the prognosis for folks like Hotmail and Eudora and the rest of them isn't good unless they get picked up by one of the big boys," Enderle said.

In addition to Eudora Web-

Mail, Qualcomm last week announced it has begun shipping the Eudora Pro E-mail 4.0 client.

Priced at \$39, this upgrade adds support for Internet Message Access Protocol 4, HTML Mail and Lightweight Directory Access Protocol. ■

## IBM rolls out electronic commerce products



By Nancy Weil  
New York

IBM last week announced new partnerships, services and products that the company said will make it easier to conduct electronic commerce over the Internet.

At the Internet World/Fall '97 show, AMPeMerce, Inc. and United Parcel Service (UPS) joined IBM in unveiling new video, asset management and home page-creation software — all under the auspices of IBM's

e-business initiative.

Announced at the show were:

- The IBM Subscriber Management System, which will enable Internet service providers to keep track of growing customer bases and allow them to add personalized services. The system is designed to give smaller ISPs freedom to move beyond the \$19.95 monthly access fee structure so they will be able to offer flexible pricing plans and the kind of content that until now only major online companies have been able to provide.

The system will allow ISPs to

track subscriber online access patterns — with preapproval from subscribers — and then, based on those patterns, create individualized Web pages that fit personal interests.

- IBM Asset Services, which will help customers track and control multivendor desktop computers and software, keep tabs on inventory and request acquisitions.

- HotVideo, a technology being developed in IBM research labs, which will let developers embed hyperlinks in Internet video presentations. The

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# Lucent buys Gigabit Ethernet start-up

By David Rohde  
Murray Hill, N.J.

Lucent Technologies, Inc. last week crossed off a big item on its 1997 "to do" list: Offer

application will support Java and Windows 95.

- AMPeMerce, which provides Internet commerce software, joins forces with IBM to offer clients electronic commerce and cataloging tools.

- IBM and UPS will provide a HomePage Creator CD-ROM to more than 6,000 UPS business customers as part of a pilot program. The service is available for a cost of \$29.95 to \$54.95 per month. The CD-ROM will help businesses create electronic commerce Web sites and will automate a variety of shipping functions.

Weil is a correspondent with the IDG News Service's Boston bureau.

users more than just an ATM switch for campus backbones.

The company took care of that item by announcing it will acquire Gigabit Ethernet start-up Prominet Corp. The move means users will have a choice of ATM and high-speed Ethernet LAN boxes to link to Lucent's new WAN switches.

In September, Prominet began shipping its P550 Cajun Switch, providing standard 10M bit/sec Ethernet as well as 100M bit/sec and 1G bit/sec switching capacity. The Cajun switch will be positioned as an alternative to Lucent's new campus ATM backbone switch, the AX 500, unveiled in September as part of the company's new family of data products (NW, Sept. 22, page 1).

The deal is sweetened by the fact that next year Prominet will begin trials of a new version

of the switch. The new version will add Layer 3 routing capability as well as traffic prioritization based on Layer 3 and Layer 4 application information.

The Prominet deal continues a recent acquisition binge by Lucent, following purchases of virtual LAN pioneer Agile Networks, Inc., IP remote access vendor Livingston Enterprises, Inc. and voice-mail rival Octel Communications Corp.

Lucent officials are candid about taking advantage of their recently high-flying stock to buy products and expertise where they are lacking because of the company's telephony heritage as an AT&T spinoff.

"We have a real need for talented people who understand these key technologies," said Bill O'Shea, president of Lucent's

Data Networking Systems group.

For Prominet, the acquisition by the \$26 billion Lucent alleviates worries about escalating product-development costs.

"When you are growing like we are, the cash consumption is incredible," said Menachem Abraham, Prominet's president and CEO.

"This has turned out to be a far more crowded market than any of the start-ups had anticipated," added David Passmore, president of Decisys, Inc., a consulting firm in Herndon, Va. "Unless they get acquired, a lot of them won't make it."

Lucent executives did not seem fazed by the prospect of offering two competing LAN technologies when the company next year begins bidding for enterprise network business in earnest.

"We expect Menachem's team to be religious zealots for Gigabit Ethernet and our ATM

team to be zealots for ATM," O'Shea said.

Like rival PBX vendor Northern Telecom, Inc., Lucent has concentrated its internal data development on ATM.

## Lucent goes ga-ga for gigabit

### Facts about Lucent's acquisition of Prominet:

- **Sale price:**  
About \$200 million in Lucent stock
- **Deal closing:**  
Expected March 1998
- **Number of Prominet employees:**  
80, will team with Lucent's data networking organization
- **Key executive:**  
Prominet President and CEO Menachem Abraham becomes president, Lucent Gigabit Ethernet Switching Products

"We didn't have a Gigabit Ethernet switch in development," O'Shea said. "We always planned to enter this space through acquisition."

Senior Editor Robin Schrier  
Hohman contributed to this story.



We know you're way too busy putting out fires to focus on improving customer service, streamlining business processes and a small thing like contributing to the bottom line. That's why a customized Nortel Power Network from WilTel is such a novel idea. We'll design and install a network that integrates and enhances your business operations. We'll even handle the glitches through ongoing maintenance and network monitoring. Call it 24/7 assurance. Basically, you're free to worry about the things you need to worry about. It's the kind of stuff fairy tales are made of.

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Wire-speed routing on all ports

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Fully non-blocking

As seen in Network World

Stacking up the gigabit routing switch market

Vendor	Product	Backplane capacity	Max. number of Gigabit Ethernet ports	IPX wire-speed routing	Modular chassis based
Packet Engines	PE-4884	52G bit/sec	25	Yes	Yes
Bay	Accelar 1200	15G bit/sec	12	No	Yes
Extreme	Summit I	18G bit/sec	8	No	No
Foundry	TurboIron	4G bit/sec	6	Yes	No
Prominet	Cajun P550	42G bit/sec	24	Yes	Yes

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PE - 4884™ GIGABIT ROUTING SWITCH

The Gigabit Ethernet Guide

Packet Engines™ is leading the way in Gigabit Ethernet. As you can see from the *Network World* table above, the PE-4884™ Gigabit Routing Switch is no exception. And this doesn't even factor in its non-blocking *parallel access* shared memory

architecture, wire-speed routing throughput of more than 35 million packets per second, and wire-speed filtering and forwarding based on Layer 4 information. With these advanced features, the PE-4884 leaves the competition in its tracks.

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Form: 9702

**1** What is the principal business activity at your location? (check one only)

- |   |  |
|---|--|
| 01. <input type="checkbox"/> Manufacturing (other)  | 12. <input type="checkbox"/> Government (Federal/State/Local)                    |
| 02. <input type="checkbox"/> Finance/Banking  | 13. <input type="checkbox"/> Military  |
| 03. <input type="checkbox"/> Insurance/Real Estate/Legal  | 14. <input type="checkbox"/> Aerospace   |
| 04. <input type="checkbox"/> Health Care Services   | 15. <input type="checkbox"/> Consulting (Independent)*                           |
| 05. <input type="checkbox"/> Hospitality/Entertainment/Recreation   | 16. <input type="checkbox"/> Carriers/Interconnects                              |
| 06. <input type="checkbox"/> Media/TV/Cable/Radio/Print   | 17. <input type="checkbox"/> Internet Service Provider (ISP)                     |
| 07. <input type="checkbox"/> Retail/Wholesale Trade/Business Services   | 18. <input type="checkbox"/> Manufacturing (Computer/Communications/OEM)         |
| 08. <input type="checkbox"/> Transportation   | 19. <input type="checkbox"/> Resellers of Computer/Network Products (VARs, VADs) |
| 09. <input type="checkbox"/> Utilities  | 20. <input type="checkbox"/> Systems/Network Integrators*                        |
| 10. <input type="checkbox"/> Education  | 21. <input type="checkbox"/> Distributors (Computer/Communications)*             |
| 11. <input type="checkbox"/> Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry) | 22. <input type="checkbox"/> Other (please specify) _____                        |

\*Please complete form based on largest client.

**2** What is your job function? (check one only)

**NETWORK IS MANAGEMENT:**

- |  |   |
|--|---|
| 1. <input type="checkbox"/> Network Management                     | 6. <input type="checkbox"/> Engineering Management  |
| 2. <input type="checkbox"/> LAN Management                         | 7. <input type="checkbox"/> Corporate Management (CEO, Pres., VP, Dir., Mgr., Financial Management) |
| 3. <input type="checkbox"/> Datacom/Telecom Management             | 8. <input type="checkbox"/> Consultant (Independent)  |
| 4. <input type="checkbox"/> IS, IT, MIS, CIO, Systems Management   | 9. <input type="checkbox"/> Other (please specify) _____  |
| 5. <input type="checkbox"/> Internet/Intranet Management/Webmaster |   |

**3** What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of? (Please **print** the appropriate **number code** in the box next to each product category. Please complete ALL categories A-M.)

- |                                   |   |  |
|-----------------------------------|---|--|
| 1. \$50 Million or more           | A <input type="checkbox"/> Large Systems (Mainframes/Minis)       | H <input type="checkbox"/> Internet        |
| 2. \$25 Million to \$49.9 Million | B <input type="checkbox"/> Desktops (Micros/Laptops/Workstations) | I <input type="checkbox"/> Intranet        |
| 3. \$10 to \$24.9 Million         | C <input type="checkbox"/> Servers                                | J <input type="checkbox"/> Remote Access   |
| 4. \$1 to \$9.9 Million           | D <input type="checkbox"/> LANs                                   | K <input type="checkbox"/> Peripherals     |
| 5. \$100,000 to \$999,999         | E <input type="checkbox"/> WAN Equipment                          | L <input type="checkbox"/> Software        |
| 6. \$50,000 to \$99,999           | F <input type="checkbox"/> Carrier Services                       | M <input type="checkbox"/> Service/Support |
| 7. Under \$50,000                 | G <input type="checkbox"/> Internetworking                        |  |
| 8. None of the above              |   |  |

**4** What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+    2. ☐ 50-99    3. ☐ 20-49    4. ☐ 10-19    5. ☐ 2-9    6. ☐ 1    7. ☐ None

**5** What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization? (Check one box in each column)

SERVERS		CLIENTS		LANs	
At Location A	Entire Org. B	At Location C	Entire Org. D	At Location E	Entire Org. F
<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>	<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>	<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>
<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>	<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>	<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>
<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>	<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>	<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>
<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>	<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>	<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>
<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>	<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>	<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>
<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>	<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>	<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>
<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>	<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>	<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>
<input type="checkbox"/> 8. none	<input type="checkbox"/>	<input type="checkbox"/> 8. none	<input type="checkbox"/>	<input type="checkbox"/> 8. none	<input type="checkbox"/>

**6** What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

**A. Scope (check one only)**

1. ☐ Corporate/Enterprise  
2. ☐ Department  
3. ☐ None

**B. Involvement (check ALL that apply)**

1. ☐ Create Network Strategy  
2. ☐ Recommend/Specify  
3. ☐ Approve

4. ☐ Evaluate

5. ☐ Determine the need  
6. ☐ None

**7** What is the estimated number of employees at your location/in entire organization? (check one in each section)

**A. At your location:**

- |   |   |   |   |
|---|---|---|---|
| 1. <input type="checkbox"/> Over 20,000     | S. <input type="checkbox"/> 1,000 - 2,499 | 1. <input type="checkbox"/> Over 20,000     | S. <input type="checkbox"/> 1,000 - 2,499 |
| 2. <input type="checkbox"/> 10,000 - 19,999 | 6. <input type="checkbox"/> 500 - 999     | 2. <input type="checkbox"/> 10,000 - 19,999 | 6. <input type="checkbox"/> 500 - 999     |
| 3. <input type="checkbox"/> 5,000 - 9,999   | 7. <input type="checkbox"/> 499 or less   | 3. <input type="checkbox"/> 5,000 - 9,999   | 7. <input type="checkbox"/> 499 or less   |
| 4. <input type="checkbox"/> 2,500 - 4,999   |   | 4. <input type="checkbox"/> 2,500 - 4,999   |   |

**B. Entire organization:**

8

Please indicate the products/services that you are currently involved in purchasing or plan to purchase: (Check ALL that apply)

**A. Currently involved in purchasing**

**B. Plan to purchase**

## INTERNET/INTRANET

- A** ☐ 01. ☐ Internet Services  
**B** ☐ 02. ☐ Firewalls/Security/Encryption  
☐ 03. ☐ Internet Web Servers  
☐ 04. ☐ Intranet Web Servers  
☐ 05. ☐ TCP/IP Software  
☐ 06. ☐ Management/Monitoring Software  
☐ 07. ☐ Push Technology  
☐ 08. ☐ Web Browsers  
☐ 09. ☐ Intranet Applications/Groupware  
☐ 10. ☐ Search/Retrieval Products (web crawler)  
☐ 11. ☐ Internet Development Tools (JAVA, ActiveX, etc.)  
☐ 12. ☐ Electronic Commerce Tools  
☐ 13. ☐ Internet Telephony

## LOCAL-AREA NETWORKS

- A** ☐ 14. ☐ Local-Area Networks  
**B** ☐ 15. ☐ Network Operating System Software  
☐ 16. ☐ Servers  
☐ 17. ☐ Print Servers  
☐ 18. ☐ ATM Switches  
☐ 19. ☐ Token-Ring Switches  
☐ 20. ☐ Ethernet Switches  
☐ 21. ☐ Fast Ethernet  
☐ 22. ☐ Gigabit Ethernet  
☐ 23. ☐ IP Switches  
☐ 24. ☐ LAN Storage/Backup  
☐ 25. ☐ Optical LAN Storage/Backup  
☐ 26. ☐ Disk LAN Storage/Backup  
☐ 27. ☐ Tape LAN Storage/Backup  
☐ 28. ☐ RAID LAN Storage/Backup  
☐ 29. ☐ Network Test/Diagnostic Tools  
☐ 30. ☐ Cables, Connectors, Baluns  
☐ 31. ☐ UPS  
☐ 32. ☐ Network Interface Cards  
☐ 33. ☐ SNMP Network Management

## INTERNETWORKING

- A** ☐ 34. ☐ Routers  
**B** ☐ 35. ☐ Hubs  
☐ 36. ☐ Intelligent Hubs  
☐ 37. ☐ Stackable Hubs  
☐ 38. ☐ Bridge/Router  
☐ 39. ☐ Bridges  
☐ 40. ☐ Gateways  
☐ 41. ☐ Concentrators/Repeaters

## COMPUTERS/PERIPHERALS

- A** ☐ 42. ☐ Network Computers  
**B** ☐ 43. ☐ Laptops/Notebooks/Sub-Notebooks  
☐ 44. ☐ Micros/PCs  
☐ 45. ☐ Minis  
☐ 46. ☐ Mainframes  
☐ 47. ☐ Workstations  
☐ 48. ☐ Printers/Network Printers  
☐ 49. ☐ CD-ROM  
☐ 50. ☐ Fax/Modem Boards  
☐ 51. ☐ Graphics/Multimedia/Audio/Video Boards  
☐ 52. ☐ Memory/Chips/Boards/Cards

## REMOTE/WIRELESS COMPUTING

- A** ☐ 53. ☐ Remote Access Products  
**B** ☐ 54. ☐ Remote Access Services  
☐ 55. ☐ PDAs  
☐ 56. ☐ PCMCIA Devices  
☐ 57. ☐ Wireless Data Services  
☐ 58. ☐ Wireless Data Equipment  
☐ 59. ☐ Cellular Equipment & Services

## SOFTWARE/APPLICATIONS

- A** ☐ 60. ☐ Network Management  
**B** ☐ 61. ☐ Systems Management  
☐ 62. ☐ Security  
☐ 63. ☐ Communications Software  
☐ 64. ☐ Terminal Emulation  
☐ 65. ☐ Operating Systems  
☐ 66. ☐ Applications Development Tools  
☐ 67. ☐ Database Management/RDBMS  
☐ 68. ☐ Groupware  
☐ 69. ☐ Workflow  
☐ 70. ☐ EDI  
☐ 71. ☐ E-mail  
☐ 72. ☐ Desktop Video Conferencing  
☐ 73. ☐ Imaging  
☐ 74. ☐ Suites/Server Suites (Back Office, etc.)  
☐ 75. ☐ Middleware  
☐ 76. ☐ Document Management  
☐ 77. ☐ Site Metering Tools  
☐ 78. ☐ Computer Telephony Integration (CTI)  
☐ 79. ☐ Data Warehousing

## WIDE-AREA NETWORK EQUIPMENT & SERVICES

- A** ☐ 80. ☐ Modems  
**B** ☐ 81. ☐ Asynchronous Transfer Mode (ATM)  
☐ 82. ☐ Frame Relay Equipment/Services  
☐ 83. ☐ ISDN Equipment & Services  
☐ 84. ☐ FT-1/T-1/T-3 Multiplexers/Services  
☐ 85. ☐ DSL Services/Products  
☐ 86. ☐ SONET  
☐ 87. ☐ Inverse Multiplexers  
☐ 88. ☐ SMDS  
☐ 89. ☐ Diagnostic/Test Equipment  
☐ 90. ☐ DSU/CSU  
☐ 91. ☐ VSAT/Satellite  
☐ 92. ☐ PBXs  
☐ 93. ☐ Voice Mail/Response  
☐ 94. ☐ Videoconferencing  
☐ 95. ☐ Leased Lines  
☐ 96. ☐ Switched Data  
☐ 97. ☐ Virtual Networks  
☐ 98. ☐ Outsourcing/Systems Integration Services  
☐ 99. ☐ Education/Training Services

☐ 00. ☐ None of the above (1-99)

9

Please indicate the platforms that are currently installed/planned:

(Check ALL that apply)

**A. Currently installed**

**B. Planned for purchase**

## NETWORK PROTOCOLS

- A** ☐ 01. ☐ TCP/IP  
**B** ☐ 02. ☐ IPv6  
☐ 03. ☐ SNA  
☐ 04. ☐ DECnet  
☐ 05. ☐ Novell IPX/SPX  
☐ 06. ☐ APPC/APPN/LU 6.2  
☐ 07. ☐ NETBIOS  
☐ 08. ☐ AppleTalk  
☐ 09. ☐ NFS  
☐ 10. ☐ Other (please specify) \_\_\_\_\_

## LAN ENVIRONMENT

- A** ☐ 11. ☐ Gigabit Ethernet  
**B** ☐ 12. ☐ Switched Ethernet  
☐ 13. ☐ Fast Ethernet (100 Megabit Ethernet)  
☐ 14. ☐ Ethernet  
☐ 15. ☐ ATM  
☐ 16. ☐ Token Ring/Token Ring Switching  
☐ 17. ☐ IP Switching  
☐ 18. ☐ FDDI  
☐ 19. ☐ 100Base-T  
☐ 20. ☐ 10Base-T  
☐ 21. ☐ LocalTalk  
☐ 22. ☐ Fibre Channel  
☐ 23. ☐ 100vg Any LAN  
☐ 24. ☐ Other (please specify) \_\_\_\_\_

## NETWORK OPERATING SYSTEM

- A** ☐ 25. ☐ Windows NT  
**B** ☐ 26. ☐ Windows NT/Advanced Server  
☐ 27. ☐ Novell IntranetWare  
☐ 28. ☐ Novell (NetWare 4.X)  
☐ 29. ☐ Novell (NetWare 2.X, 3.X)  
☐ 30. ☐ Microsoft (LAN Manager)  
☐ 31. ☐ LocalTalk (AppleTalk)  
☐ 32. ☐ Banyan (VINES)  
☐ 33. ☐ IBM (LAN Server)  
☐ 34. ☐ Artisoft (LANtastic)  
☐ 35. ☐ Other (please specify) \_\_\_\_\_

## COMPUTER OPERATING SYSTEM

- A** ☐ 36. ☐ NT Server  
**B** ☐ 37. ☐ NT Workstation  
☐ 38. ☐ Unix/Xenix/AIX  
☐ 39. ☐ Solaris  
☐ 40. ☐ Windows  
☐ 41. ☐ Windows 95  
☐ 42. ☐ Windows 97  
☐ 43. ☐ DOS  
☐ 44. ☐ OS/2 Warp  
☐ 45. ☐ IBM MVS/VM/SE  
☐ 46. ☐ Digital VMS  
☐ 47. ☐ Macintosh  
☐ 48. ☐ Other (please specify) \_\_\_\_\_

☐ 49. ☐ None of the above (1-48)

10

Which of the following Servers/Clients do you have installed/planned at your location? (check ALL that apply in each column)

	A. Servers	B. Clients		A. Servers	B. Clients
01. Power PC	<input type="checkbox"/>	<input type="checkbox"/>	07. 486	<input type="checkbox"/>	<input type="checkbox"/>
02. Power Mac	<input type="checkbox"/>	<input type="checkbox"/>	08. 386	<input type="checkbox"/>	<input type="checkbox"/>
03. Mac Other	<input type="checkbox"/>	<input type="checkbox"/>	09. 286	<input type="checkbox"/>	<input type="checkbox"/>
04. Multiprocessor Servers	<input type="checkbox"/>	<input type="checkbox"/>	10. Risc	<input type="checkbox"/>	<input type="checkbox"/>
05. P6/PII	<input type="checkbox"/>	<input type="checkbox"/>	11. Alpha	<input type="checkbox"/>	<input type="checkbox"/>
06. Pentium/Pentium Pro	<input type="checkbox"/>	<input type="checkbox"/>	12. Other	<input type="checkbox"/>	<input type="checkbox"/>

11

Which of the following hardware platforms are installed/planned in your company? (check ALL that apply)

## A - Mainframes (Large Scale) Installed/Planned

1. ☐ IBM  
2. ☐ Amdahl  
3. ☐ Cray  
4. ☐ Hitachi  
5. ☐ Unisys  
6. ☐ Other \_\_\_\_\_

## B - Minis (Midrange) Installed/Planned

1. ☐ IBM RS6000  
2. ☐ IBM AS400  
3. ☐ Digital  
4. ☐ Tandem  
5. ☐ Unisys  
6. ☐ AT&T GIS  
7. ☐ HP  
8. ☐ Data General  
9. ☐ Other \_\_\_\_\_

## C - Workstations Installed/Planned

1. ☐ Sun Microsystems  
2. ☐ Silicon Graphics  
3. ☐ Digital  
4. ☐ HP  
5. ☐ IBM  
6. ☐ Other \_\_\_\_\_

12

What is the estimated gross annual revenue of your entire company/institution? (check one only)

- |   |   |   |
|---|---|---|
| 01. <input type="checkbox"/> \$20 billion or more             | 05. <input type="checkbox"/> \$100 million to \$499.9 million | 08. <input type="checkbox"/> \$5 million to \$9.9 million |
| 02. <input type="checkbox"/> \$10 billion to \$19.9 billion   | 06. <input type="checkbox"/> \$50 million to \$99.9 million   | 09. <input type="checkbox"/> \$4.9 million or less        |
| 03. <input type="checkbox"/> \$1 billion to \$9.9 billion     | 07. <input type="checkbox"/> \$10 million to \$49.9 million   | 10. <input type="checkbox"/> None of the above            |
| 04. <input type="checkbox"/> \$500 million to \$999.9 million |   |   |

13

For which areas outside of North America do you have purchase influence? (check ALL that apply)

1. ☐ Europe    2. ☐ Asia    3. ☐ South America    4. ☐ Australia    5. ☐ Middle East    6. ☐ None



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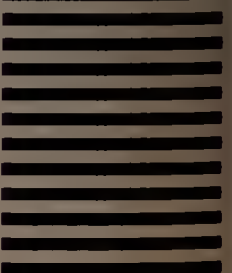
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# Local Networks

Covering: LAN Hubs, Switches and Management • Operating Systems • Servers • Thin Clients

## Briefs

■ **IBM** recently announced it will be posting new Java-based software technologies to its alpha-Works Web site in the next few weeks. One of them is **Servlet Express**, a plug-in that lets users Java-enable a Web server. IBM also announced the **Beanery**, a wizard-based tool for creating or enhancing Java Beans objects. The site can be found at [www.alphaworks.ibm.com](http://www.alphaworks.ibm.com).



■ **Banyan Systems, Inc.** today announced a new version of its **network operating system**. **VINES 8.0** includes integrated **Lightweight Directory Access Protocol** support for its **StreetTalk** Directory service and enhanced messaging capabilities through the addition of Banyan's **Intelligent Messaging 4.0** and **BeyondMail 3.0**, both of which have Microsoft Corp.'s **Messaging API** support.

**VINES 8.0** also includes enhanced client support for **Windows 95** and **NT**, as well as **Banyan Intranet Connect**, which provides remote client access to all **StreetTalk** resources via a browser. **VINES 8.0** will be available before year-end. The product costs \$70 per user and \$1,995 per server.

© Banyan: (508) 898-1000

■ **AsantÉ Technologies, Inc.** has announced two **10/100 Ethernet switches** for small office and corporate workgroups. The switches, available now, have eight **10M bit/sec** connections and two **10/100 dual-speed** ports. The **FriendlyNet FS3208** desktop switch supports **32 media access control (MAC)** addresses and is expected to sell for about \$295, or \$29 per port. The **FriendlyNet FS3208Plus** supports **3,000 MAC** addresses and is expected to sell for about \$395, or \$39 per port.

© AsantÉ Technologies: (408) 435-8401

## Dell moving up in PC server ranks

*The \$11 billion company is running neck and neck with Big Blue.*

By **Marc Songini**  
Round Rock, Texas

At the end of last year, Dell Computer Corp. was ranked fourth in the U.S. PC server market. Now, less than a year later, the high-flying, direct-selling powerhouse has snuck its way into a tie for second place with IBM in the third quarter of 1997, according to International Data Corp. (IDC), a Framingham, Mass.-based market research firm.

The \$11 billion Dell, with its **PowerEdge** line of servers, has experi-

enced a growth spurt over the past year, and it appears that the company's direct sales model and pricing are the keys

to its success.

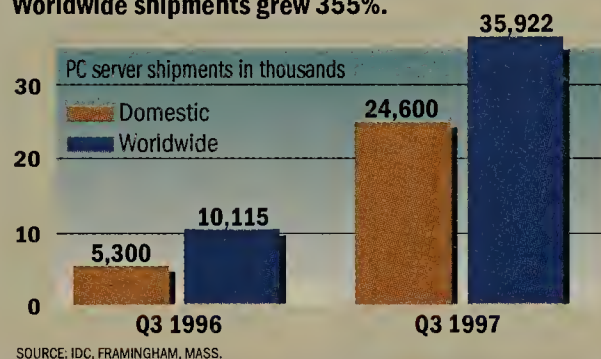
Compaq Computer Corp., however, remains firmly and comfortably in first place.

Dell's third quarter shipment volume was 24,600 units in the U.S., up 464% when compared with the third quarter of 1996. Dell shipped 17,855 servers in the previous quarter; IBM shipped 21,400.

If it continues, Dell's momentum could push the company past IBM and send it on its way to closing the gap with Compaq. Compaq shipped 64,100 servers

### COMING ON STRONG

Dell's domestic PC server shipments grew 464% compared with the same time period last year. Worldwide shipments grew 355%.



## 3Com recruits service-level allies

*BMC and InfoVista put muscle behind TranscendWare.*

By **Robin Schreier Hohman**  
Santa Clara, Calif.

3Com Corp. is attacking the service level agreement (SLA) conformance management market, with help from a couple of friends.

The network giant last week announced agreements with

BMC Software, Inc. and InfoVista Corp. to boost the service-level capabilities of 3Com's **TranscendWare** management and monitoring software.

The companies will work together in three phases. In the first quarter of next year, InfoVista will deliver software that integrates 3Com's **TranscendWare** with BMC's **Patrol** Management software suite, which tracks network applications and databases.

Sold as an additional library for the **InfoVista System**, the software will create SLA reports based on 3Com and **Patrol** data.

In mid-1998, 3Com and BMC will integrate **Patrol** and **Transcend** network management software, which will provide a more unified approach to data gathering, creating topology maps and troubleshooting.

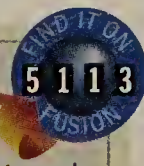
In this phase, BMC also will deliver its **Patrol Knowledge Module** for 3Com data that will offer

3Com-specific network information in a variety of formats, including **Common Information Model**, **Java Management API** and **Web-based Enterprise Management**.

### Get more online:

- An overview of the growing role of policy-based management
- More info on InfoVista's approach to network management

[www.nwfusion.com](http://www.nwfusion.com)



The third phase is a little sketchier, but BMC and 3Com promise to develop new technology to further integrate network, database and application management.

One analyst applauded the arrangement. "BMC's real strength is in the application and database management side of things," said Elizabeth Rainge, an analyst at International Data Corp., in Framingham, Mass. "[The partnership] has a lot of value, because what really matters is knowing what kind of service we're going to get out of the network. We want to know if we can rely on the network being up," she said.

© 3Com: (800) 877-2677

last quarter, up from 48,300 in the second quarter.

"Nothing is stopping Dell," said Amir Ahari, an analyst with IDC. "They're still on track."

Ahari argued that Dell's success comes from its build-to-order, direct sales model of distribution, which allows the company to sell its servers at a cost of about 10% to 15% less than other competitors. "There is no middleman," Ahari said.

The direct model is cheaper for buyers and also lets Dell know just who its customers are and what they want. Dell also boasts of the success of its Web site, **Dell.com**, which snags \$3 million per day in sales.

Compaq, no doubt feeling Dell's breath down its neck, recently announced it too was going to add build-to-order services.

### Path of least resistance

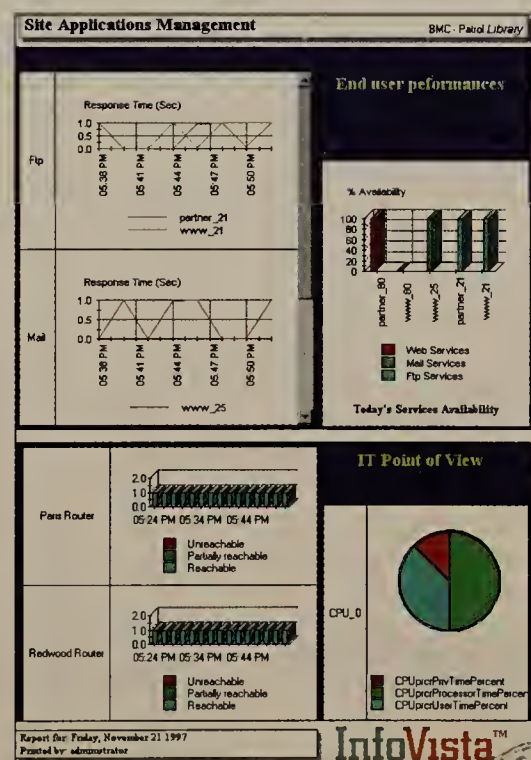
While Dell is on the cutting edge of sales and marketing, that is not the case in the area of technology, experts said. Instead, the company largely relies on existing technology — including Intel Corp.'s chips and other standard PC server components — rather than innovating.

That works well for PC servers, which rapidly are becoming interchangeable commodities with identical CPUs, operating systems and other features. "We're conservative to the extent that we're not introducing proprietary technology of our own," said Tejas Vakil, vice president of server marketing for the Americas at Dell.

On the other hand, Dell is amazingly quick at incorporating other companies' technologies into its boxes, particularly those of its partners — Intel, Microsoft Corp. and Oracle Corp., Vakil said.

Dell even is willing to partner with direct competitors, such as Hewlett-Packard Co., to get access to technology. HP and Dell have been working together to support **OpenView** network management software, Vakil said.

Will Dell ever overtake Compaq as king of the PC server market, a juggernaut striving to be the next IBM? "There's always the possibility," Ahari said. "Nothing is guaranteed." ■



3Com will be using BMC's **Patrol** agent, which allows for extensive data gathering capabilities across the enterprise.





## In praise of Eric Schmidt

**I** was sitting in the stands yesterday watching my hometown hockey team, the Austin Ice Bats.

They were playing their fourth game in four days, with two nine-hour bus trips thrown in. They looked very tired, losing

to a team with a poor record. The loss dropped them to second place.

It looked a lot like Novell's performance in the networking league early this year. After 10 years of winning the championship, they were losing badly to a team from Redmond, Wash., that, until then, never had shown any indication they could play in the networking big league.

Microsoft had been mired in work-group computing and not winning many games when they discovered what every team owner knows: Get a flashy offense and the fans will pack the stands.

So Microsoft rallied its troops, and pretty soon, not a day went by without a new announcement for NT Server.

The only time Novell's name was featured in the trade press was in stories speculating about where the team would move — to IBM or AT&T. Some even thought the Big Red team would simply fold up and cease playing.

So Novell did what any franchise does when its usually solid team starts to get flat — they fired the coach. Then they made a nervy move by bringing in a new coach,

Eric Schmidt, who'd never been the head man before. The boldness of the move and the speculation on what it all meant gave Schmidt time to reorganize.

First came new products — BorderManager, Replication Services, Distributed Print Services. In time-honored sports fashion, it then took advantage of its opponent's glaring weakness by releasing Novell Directory Services (NDS) for Windows NT.

Now coach Schmidt is dropping the hokey NOS name, IntranetWare, coined by his predecessor, and is returning to the well-known NetWare name in another attempt to recall the glory days. Coaches Schmidt and Gates have given us looks at next season's teams — NetWare 5 (code-named Moab) and NT 5. But NT 5 may have to sit out the season if Microsoft can't get its development act together.

The preseason choice definitely is Novell as network honchos, fed up with Redmond's "wait until next year" refrain, begin to return to the NetWare fold.

Easily my choice for coach of the year in the Professional Networking League is Eric Schmidt, who looks to be just the right man to restore the Provo franchise to its glory days under the legendary Ray Noorda.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at [wired@vquill.com](mailto:wired@vquill.com).



Dave Kearns

### Tip of the week

*For years, network administrators have begged Novell for a utility that would let them purge deleted files by age, owner or file type. All to no avail. Now a small Dutch utility company has produced an application that will do just that and do it unattended if you want. AutoPurge runs as a NetWare Loadable Module on your NetWare server. Go to [www.euronet.nl/users/rovabu/www/](http://www.euronet.nl/users/rovabu/www/) for more details and to pick up a demo version.*

## Novell freshens NetWare 3.12

*Network administrators gain graphical administration interface.*

**By Christine Burns**  
Provo, Utah

Novell, Inc. last week introduced an enhancement pack for NetWare 3.12 servers that makes older Novell installations faster and more manageable.

The NetWare 3.2 Enhancement Pack is an add-on product for NetWare 3.12 servers and includes a new graphical administration module.

The Windows 3.11, 95 or NT-based system configuration utility replaces the existing DOS-based utility for setting up and managing NetWare 3.12 servers. The interface allows administrators to manage multiple NetWare 3.12 servers from a single network console. The DOS utility required an administrator to sit in front of the server to manage it.

Client access should speed up with Novell's upgraded Client32 software for Windows 95 and NT machines. Novell officials said the clients are faster and more secure than the previous 32-bit clients, and offer an autoreconnect feature should the connection to a NetWare 3.12 server fail.

The NetWare 3.2 Enhancement Pack also ships with the new NetWare Link Service Protocol (NLSP) suite, which cuts down on the IPX routing overhead in NetWare 3.12 networks. NLSP, which already is supported in NetWare 4.X networks, pinpoints the most direct path between servers, clients and network devices for more efficient use of bandwidth.

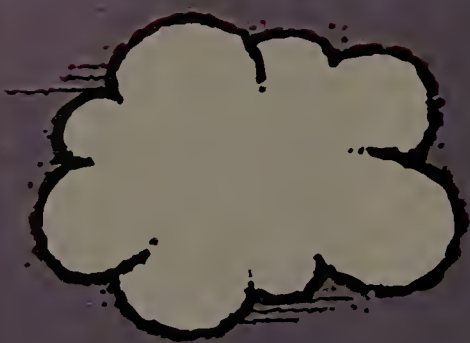
While users were glad to learn that Novell is committed to supporting its NetWare 3.X users — which still make up almost 50% of its installed base — they were not overwhelmed by the new features.

"We have learned to cope with the DOS-based tools for years now. It's not worth spending the money for [the NetWare 3.2 Enhancement Pack] before we make the jump to a pure NetWare 4.X network," said Travis Berkley, supervisor of LAN support services at the University of Kansas.

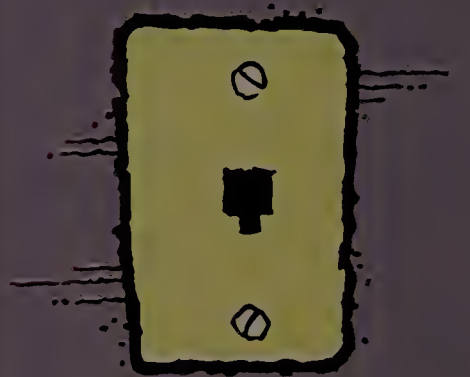
The NetWare 3.2 Enhancement Pack will be available next month for \$349 per server.

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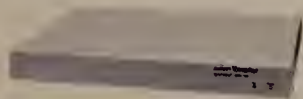
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## Briefs

■ **ADC Kentrox** last week introduced the **AAC-2 ATM access concentrator**. The AAC-2 can bond up to six T-1 access lines using ATM inverse multiplexing. The device also supports



ADC Kentrox's AAC-2 inverse multiplexes ATM T-1 lines.

interfaces for T-3 and OC-3 WAN connections, and can perform local switching across its 524M bit/sec backplane. The device can support a High Speed Serial Interface port as well as a 10M bit/sec Ethernet port. Available now, AAC-2 costs between \$13,500 and \$20,000.

© ADC Kentrox: (800) 232-5879

■ **3Com Corp.** recently integrated its technology with remote access hardware it got with the purchase earlier this year of U.S. Robotics (USR). The 3Com **SuperStack II 3000 remote access chassis** supports 144 dial-up calls in one shelf using hardware from USR's Total Control Enterprise Hub. The hardware modules for the SuperStack II 3000 device include a modem card, Access Router 3000 and EdgeServer Pro remote access server. SuperStack II 3000 costs approximately \$275 per port and will be available next month.

© 3Com: (408) 764-5000

■ **Ascend Communications, Inc.** last week announced **DS 3/1/0**, a channelized DS-3 hardware module for its B-STDX 8000 and 9000 frame relay switches. The module supports DS-0 and DS-1 channels and can bond them into larger circuits. It also can terminate up to 672 DS-0s or 28 DS-1s. Ascend also announced a DS-3 cell-switching module and an OC-3 interworking unit. The DS 3/1/0 costs \$67,000, the cell-switching module costs \$33,000 and the interworking module costs \$35,000.

© Ascend: (510) 769-6001

## Concord improves Network Health

*New version features greater customization and scalability.*

**By Jim Duffy**

Marlborough, Mass.

Concord Communications, Inc. last week unveiled a new version of its network management reporting software that lets users customize information about their enterprisewide resources.

Network Health 4.0 runs on Windows NT and Unix workstations and servers. It features a graphical user interface that in minutes allows users to generate customized reports on network performance and capacity, Concord said. The interface can be accessed from an NT or Unix console, or from a Web browser.

Using Network Health 4.0, IT managers can select what elements to monitor and the frequency of reports. They also can choose the output format, including HTML, postscript, ASCII and portable document format. Customized trend reports can be distributed via a corporate intranet or scheduled for delivery via e-mail to IT and business executives.

IT managers can use the reports for capacity planning and to pinpoint performance problems in any segment of the enterprise. They also can distribute the exact information needed to highlight the problem with the frequency and format that best suits their needs.

"You can do more; there are more options available with the reports," said Dale Cabell, manager of network services at Novaquest Network Management Group, in Irvine, Calif. "We customize our reports for all of our customers, so it's very important that we provide additional ways of looking at the data."

**Get more online:**

- Info on a push-based reporting system
- A look at reporting enhancements from Kaspla and Hewlett-Packard

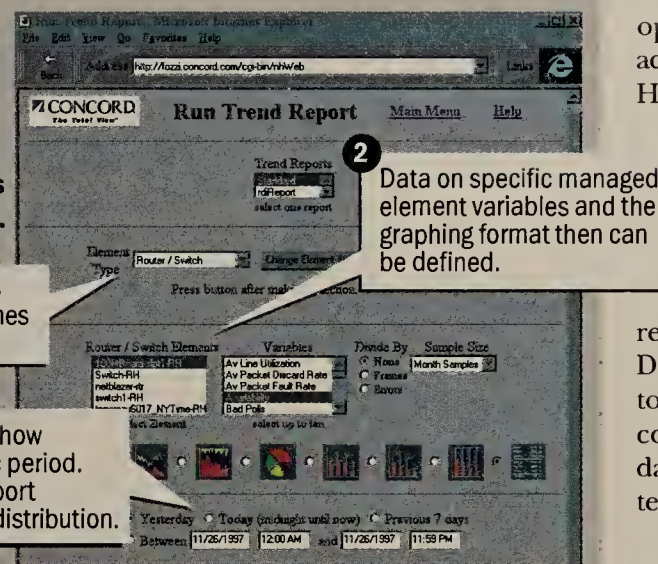
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### HEALTH REPORT

Concord's Network Health 4.0 allows users to customize management reports using a Web browser.

1 Users select elements such as routers, switches or servers.

3 Reports can be tailored to show performance over a specific period. Users also can schedule report generation, file format and distribution.



Version 4.0 also supports 10,000 to 20,000 elements, which is double that of previous versions, and features faster report generation, Concord said.

The installation of Network Health 4.0 across distributed clients and servers could be improved, though, Cabell said.

Also, as with other reporting tools, Network Health 4.0 still requires users to drill into individual devices for more detailed data, he said.

A \$5,000 option to Network Health 4.0 may improve that. The option is the Network Health Developer Program,

which is targeted at advanced enterprise users and service providers that wish to develop fully customized reports for management, customers and non-IT users.

The Network Health Developer Program allows users to access a library of Network Health reports and graphics panels to generate reports specifically designed for unique business and reporting requirements.

In addition to scheduling, generating and distributing reports, the Network Health Developer Program allows users to define new input sources of configuration and performance data, as well as new report content and formats, Concord said.

The Network Health Developer Program includes a selection of report formats, a report generation tool kit and training from Concord.

Network Health 4.0 is now available free for existing customers enrolled in Concord's maintenance program. Version 4.0 pricing for new customers begins at \$20,000.

© Concord: (508) 460-4646

## IBM offers VPN support for low-end routers

**By Marc Songini**

Research Triangle Park, N.C.

IBM is adding virtual private network (VPN) technology to its low-end router family.

Last week, Big Blue announced new operating system software — Nways Multiprotocol Routing Services 2.2 — for its 2210 router family, which will let users link remote offices more easily and securely over the 'Net.

VPNs are relatively inexpensive and a protected way to connect telecommuters, mobile workers and remote branch offices to the corporate backbone.

Specifically, the new router software supports the Layer 2 Tunneling Protocol (L2TP), which is a combination of the Point-to-Point Tunneling Protocol (PPTP) championed by Microsoft Corp. and the Layer 2 Forwarding (L2F) protocol, which Cisco Systems, Inc. developed.

Implementing L2TP in the 2210 will let remote users securely tunnel data between 2210-based nets or other devices that support L2TP. Devices that support L2TP encrypt data and



The 2210 router is IBM's first L2TP-enabled product.

send it over any underlying communications protocol to another L2TP device. The data then is decoded and passed to its final destination.

The 12 2210 routers are the first IBM products to receive the L2TP upgrade; the 2216 router will be next.

IBM is hoping telephone companies and Internet service providers in particular will use its new VPN router products, although they can be used in private nets as well.

"Today, any user who wants to

tunnel data over an IP net has to use Cisco or Microsoft proprietary protocols," said Bruce Dillon, a senior engineer for IBM's Networking Hardware Division. "Now, with L2TP, they have a nonproprietary industry standard that can encapsulate non-IP traffic over the network."

With L2TP, users also can run bridged protocols, SNA and private IP traffic over the World Wide Web, Dillon said.

L2TP support in the 2210 especially is good for small businesses or companies that have remote offices, said Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C. consultancy. However, there is no guarantee of the level of service between the two ends of the VPN, he noted.

Multiprotocol Routing Services 2.2 will be available by year-end and come preloaded on all new 2210s.

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INTERNETWORKING MONITOR

## Bay's stealthy media strategy

**W**hether launching a new product line or unveiling a new strategy, vendors desperately need a "buy in" from the press/analyst community.

After all, the reaction from this influential group is critical and could make or break a new project. All prudent vendors carefully develop strategies to make the

most positive impact on the press/analyst community.

But now, Bay Networks has come up with a masterstroke. The company is trying to achieve buy in through a "buy up" strategy. In the past few weeks, at least four visible members of the press/analyst community have been lured away from prominent, vendor-neutral industry jobs and

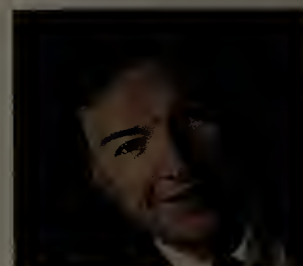
now are Bay employees. There, they'll be working in areas such as analyst relations and strategic competitive analysis.

Directly, or one-job-removed, these recent hires hail from firms such as Gartner Group, TeleChoice, *Network World* and Data Communications. Pretty impressive.

This is not chance, nor is it simply a trend. This clearly is a strategy unfolding. But what is the strategy? There are several possibilities. First, Bay may have considered this august group to be thorns in their side. Hiring these folks away effectively neutralizes them and eliminates any possibility that they might have a negative impact on Bay. I don't think this likely is the motivation.

Most likely is that these "ultimate insiders" were hired to help Bay achieve the kind of success in gaining media mind share that Cisco has had over the years. Collectively, these folks (and there may be more I've not heard about) potentially are a powerful weapon in Bay's media arsenal.

Think about it. These people have spent the last several years being briefed by all of Bay's competitors. They have studied the firms and have contacts inside most, if not all, of them.



Kevin Tolly

They know what works when companies try to influence media types. They've been on the receiving end of both highly effective and badly botched media strategies. And, perhaps most important, they have access. This is critically important.

They have access to all their old colleagues. And I don't just mean at their old firms. The press/analyst community cuts beyond just that. Before Bay can get its message across, it has to get media types to listen. That just got a lot easier.

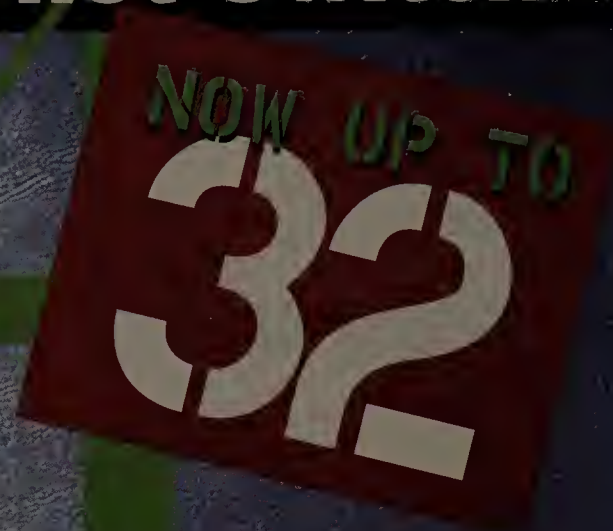
Because of their backgrounds, they are likely to be perceived as being more authoritative than others in their position. And, one wonders, will their former colleagues go easier on them?

So what does this mean? Network managers would do well to be sensitive to any changes in the media perception of Bay in the next six months. The changes might be subtle but profound. Make sure you ignore the fluff and look for hard facts and solid reasons for what is being stated.

Executives at Bay's competitors should add an agenda item to their next meeting. These recent events need to be studied closely and followed over the next few months. Vendors that have been lax in building an aggressive and well-focused media strategy may find it a lot more difficult to compete with Mr. House in 1998.

*Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at (732) 528-3300, ktolly@tolly.com or at www.tolly.com.*

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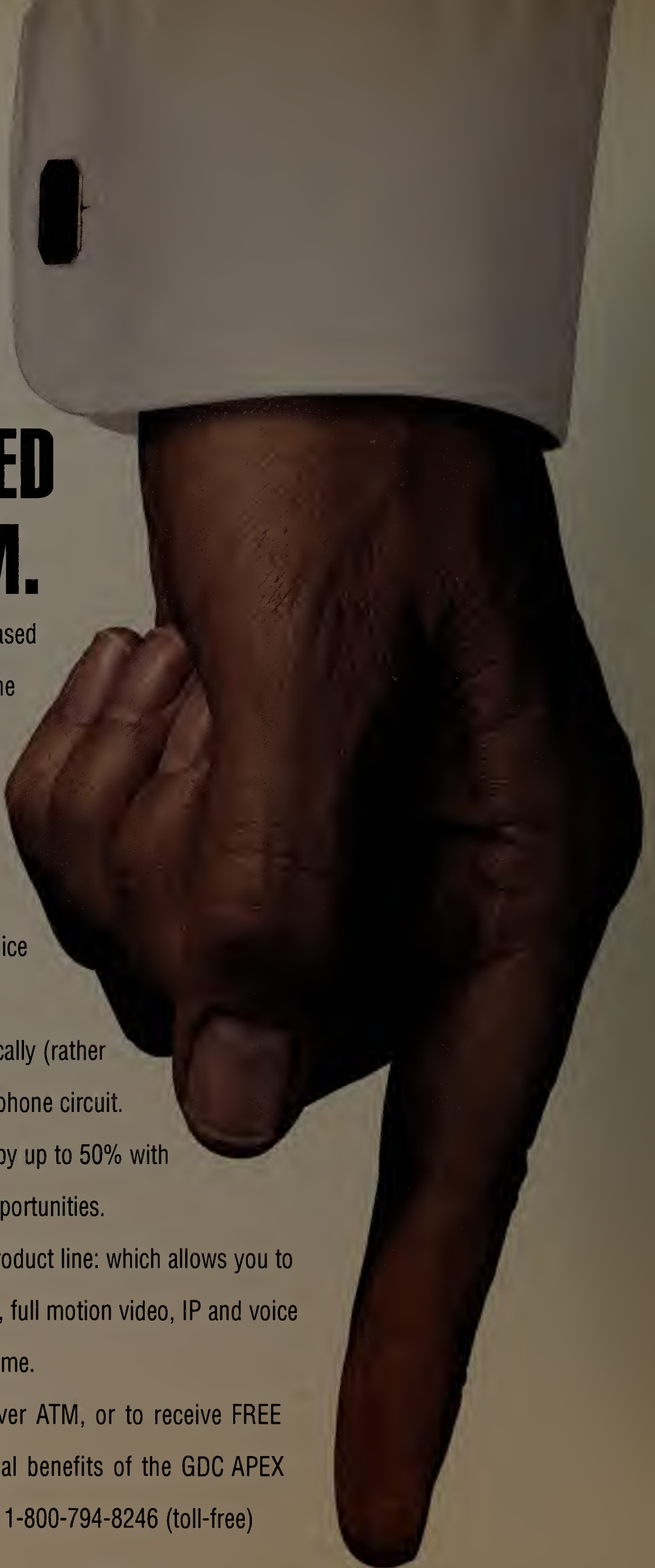
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## Briefs

■ **MCI Communications Corp.** recently announced **56K bit/sec Internet access support.** MCI is one of the last of the large national Internet service providers to join the 56K party. Competitors such as UUNET Technologies, AT&T WorldNet, Netcom On-Line Communication Services, Inc. and GTE Internetworking already support the high-speed modems.

MCI's offering works with modems based on 3Com Corp.'s x2 technology.

The 56K service is available via 280 local dial-in numbers or by using a national toll-free access number.

© MCI: (800) 550-0927

■ **Bay Junction Technology, Inc.,** a San Jose, Calif.-based regional Internet service provider, last week became the third company in the past month to announce **asymmetric digital subscriber line (ADSL) Internet access service.** Pacific Bell and Concentric Network Corp. already offer ADSL services (NW, Dec. 1, page 40). Bay Junction set up an interface between its network and PacBell's ATM network to bring the 1.544M bit/sec ADSL service to its customers. The ADSL service is available now for \$95 to \$195 per month, depending on usage.

© Bay Junction: (408) 325-0300

■ **American Communications Services, Inc. (ACSI),** a competitive local carrier, has added **long-distance calling and calling card services** to its bundled package of services.

The package already included local services and audioconferencing. In ACSI's Florida markets, the package also included dial-up Internet access and Web hosting via a recent Internet service provider acquisition. Overall, ACSI serves 37 markets, most in the southern half of the U.S.

© ACSI: (888) 398-2274

## Bell Atlantic extends ATM throughout territory

*New York, New England to get their first RBOC ATM offering; T-1, T-3 access on tap.*

**By David Rohde**  
Washington, D.C.

Shortly after the new year, Bell Atlantic Corp. is planning to announce the introduction of ATM service throughout the former NYNEX Corp. territory of New York and New England.

At the same time, Bell Atlantic officials last week confirmed that the original Bell Atlantic states in the mid-Atlantic U.S. will see an expansion of their existing intrastate ATM service. The ATM service, introduced about a year ago, will include an interstate offering.

The impending move is backed by a rollout of some 36 Cascade CBX 500 Multiservice ATM switches from Ascend Communications, Inc. over Bell Atlantic's vast region. The increase in area was created by the Bell Atlantic/NYNEX merger completed last August. Bell Atlantic recently installed five Cascade switches in Manhattan, three in the Boston area and others throughout New England to prepare for the service.

According to a tariff filing with the Federal Communications Commission, Bell Atlantic will employ a mileage-sensitive pricing scheme, enabling users in large Northeast cities to save money over equivalent private lines if they are located close to one of the Cascade switches.

For a T-3 connection, including the access line and port on the carrier switch, users will pay \$1,600 per month for sites essentially colocated with the Bell Atlantic switch. Sites located within two miles will cost \$2,200 per month, and within 16 miles sites will cost up to \$4,900 per

month. Virtual channel connections among sites will cost more (see graphic).

By contrast, users in the original Bell Atlantic region now pay a flat \$3,700 per month for the ATM User-to-Network Interface (UNI), including the port connection, regardless of mileage. T-1 access, priced at less than \$1,000 per month, initially will be available only in the former NYNEX states.

In another key difference, former NYNEX customers will enjoy a rudimentary circuit prioritization scheme not available in the original Bell Atlantic territory. The northern states will get a choice of three ATM service classes: constant bit rate traffic that emulates a private line, delay-prone variable bit rate (VBR) for LAN interconnection traffic and Priority VBR for delay-sensitive traffic such as imaging or MPEG2 video applications. The original Bell Atlantic states do not yet have the choice of Priority VBR.

"Because we're later to the

market, we have the benefit of conforming to the latest ATM [offerings]," said Jim Lowrie, the Boston-based ATM product manager for Bell Atlantic-North.

Bell Atlantic is slated to offer frame relay-to-ATM interworking in the third quarter of 1998.

With an identical Cascade switch platform in place, over the next year the two halves of Bell Atlantic will attempt to unify all their features. And at least until Bell Atlantic receives long-distance authority, Bell Atlantic-South will use private Network-to-Network Interfaces with other ATM carriers to begin providing interstate service that crosses the regional Bell operating company's serving boundaries, Gaines said.

Bell Atlantic concedes ATM service will not be economically viable in many areas for a while. A UNI surcharge for users located over 16 miles from the nearest Bell Atlantic switch would make the service cost-prohibitive for users in upstate New York, Rhode Island and Vermont, for example.

However, Bell Atlantic is working on creating additional ATM service points at central offices without the Cascade switch, Lowrie said. ■

### Pricing out the new ATM service

In the former NYNEX territory, Bell Atlantic will charge for a User-to-Network Interface (UNI) for each ATM customer site plus a virtual channel fee for each point-to-point ATM connection.

#### UNIs:

● T-1: \$675-\$960 ● T-3: \$1,600-\$4,900

#### Virtual channels:

● Constant bit rate circuit:

\$2.56 per 64K bit/sec or \$40 per 1M bit/sec

● Priority variable bit rate circuit:

\$1.80 per 64K bit/sec or \$28 per 1M bit/sec

● Standard variable bit rate circuit:

\$1.15 per 64K bit/sec or \$18 per 1M bit/sec

UNI fees vary by mileage between customer site and central office. Over 16 miles, Bell Atlantic adds a per-mile surcharge above prices given. Virtual channel speeds refer to sustained cell rate or guaranteed subscribed rate; bursting allowed up to the UNI speed. Term and volume discounts of 10% to 40% are available for the entire service.

But the original Bell Atlantic states are slated to receive the features sometime in 1998, said Evelyn Gaines, a Bell Atlantic fast-packet product manager in Arlington, Va. In addition,

## Infonet service links ISDN/frame relay nets

**By Tim Greene**  
El Segundo, Calif.

Infonet Services Corp. last week introduced a service to save customers money by piecing together fully meshed WANs from dedicated and dial-up links.

The new service, called DialXpress Virtual Enterprise, enables customer sites connected to Infonet's public packet network via ISDN to reach other customer sites connected by a frame relay line. It is available in 46 countries.

The service is designed to let customers tie together multiple sites, even if some sites do not warrant the price of a full-time dedicated connection. If traffic patterns change, the customer

can migrate to a dedicated line, Infonet said.

By dialing a nearby Infonet point of presence, users can avoid the potentially high cost of dialing directly to other sites over the public telephone network.

If a remote corporate site is connected to the network for less than four hours per day, it costs less to use ISDN than a frame relay link for that site, according to Infonet.

In conjunction with Virtual Enterprise, Infonet offers PerspeXion software that allows customers to monitor Infonet network performance from their own management stations. Based on use, PerspeXion can pinpoint which sites

warrant frame relay connections and which sites warrant dial-up.

Infonet previously offered an ISDN remote access service that let users dial out to ISDN-connected sites over the Infonet packet network. But users at ISDN-connected sites could not dial in over the Infonet network to reach sites connected by frame relay.

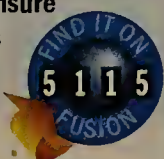
Infonet uses a feature of Ascend Communications, Inc.'s MAX remote access switches in the Infonet network to signal Ascend ISDN routers at remote sites to dial in. The destination can be a LAN connected to Infonet by a dedicated or dial-up connection.

© Infonet: (310) 335-4700

### Get more online:

● A look at ATM and frame relay pricing from GTE and AT&T

● Tips on how to ensure your carrier lives up to its service promises



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# Netcom offers wireless Internet access for mobile users

By Denise Pappalardo

San Jose, Calif.

Netcom On-Line Communication Services, Inc. last week added wireless Internet access to its mix of services for mobile business users.

Netcom recently struck a deal with Metricom, Inc., of Los Gatos, Calif., to bundle the wireless Internet service provider's Ricochet wireless service with Netcom's premium Internet access offerings, said Gene Shimshock, vice president of product marketing at Netcom.

Now for an additional \$25 per month, users of NetComplete Advantage and NetComplete Advantage Pro packages can add unlimited wireless Internet access to their services.

Users will need to purchase an SE Ricochet modem for \$349 to take advantage of Ricochet.

Netcom's Advantage and Advantage Pro are the ISP's business-quality Internet access service packages, which include multiple e-mail accounts, global roaming and a 95% network availability guarantee (NW, April 7, page 19).

## Getting to the 'Net

Netcom announced it is bundling Metricom's Ricochet, a 100K bit/sec wireless Internet access service, with its premium Internet access service offerings. Here is what you can get and how much it will cost:

- Ricochet wireless modem, \$349.
- NetComplete Advantage with Ricochet, \$49.95 per month.
- NetComplete Advantage Pro with Ricochet, \$54.95 per month.

Ricochet uses Metricom's proprietary wireless network that supports 100K bit/sec rates.

## Speedier downloads

While distance from the network and large file downloads can slow a connection, Ricochet typically is faster than other wireless technologies such as circuit switched and Cellular Digital Packet Data, according to Dan Merriman, a vice president at Giga Information Group, Inc., a Cambridge, Mass.-based consulting firm.

Netcom has deployed a Ricochet gateway at its San Jose network operating center, Shimshock said. The gateway is connected to a Netcom router so it is managed as any other device on the ISP's network would be.

It is important that business users are offered dynamic methods of accessing the Internet and corporate intranets regardless of the user's location, Merriman said.

"This is why we will most likely see more bundling of wireless and landline Internet access services," he said.

Although Ricochet is offering Netcom

business users more flexibility, its availability is limited. Metricom's Ricochet network today is in the San Francisco, Seattle and Washington, D.C. metropolitan areas. Metricom also has deployed

receivers in five airports outside its network coverage area for further reach.

This is Netcom's first foray into wireless Internet access services. Depending on customer interest, Netcom will

look to team with other service providers or continue to work with Metricom to offer national availability, Shimshock said.

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## Power, Speed and Scale on Demand:

# ATM With the Leader

**F**OR A GROWING NUMBER of mission-critical applications, the broad bandwidth and sheer speed of asynchronous transfer mode (ATM) is the data transport technology of choice. This is especially true for applications that involve "complex" data types, such as video and voice as well as data.

From disaster recovery to product distribution, network consolidation, manufacturing design and even surgery, organizations across industries are turning to ATM. There's the research

hospital using ATM to give surgical students high-quality, real-time images of operating room techniques, eliminating the need to be physically on-site for the operation. There's the

medical products distributor consolidating its network for management and cost efficiencies. There's the exploration company, able to send enormous files of geological data quickly back to corpo-

rate mainframes for analysis. And there's the global corporation using ATM to transmit design specifications to its manufacturing plants around the world.

Users such as these are discovering what many others have known for some time: When quality and reliability cannot be compromised, there's no substitute for the experience and technology leadership that AT&T has gained from its century-long history of building and managing networks. That's why AT&T is the clear ATM leader in the United States, with more than 30% more market share than its nearest competitor.

**RELIABILITY KEY** Ask network professionals to name the most mission-critical characteristic of their network to-

day, and the answer overwhelmingly will be "reliability." The key to AT&T's ATM success is the reliability of its backbone network. *Data Communications* magazine tied this success to "AT&T's unparalleled network reliability."

FASTAR represents one key to this reliability. Developed and patented by AT&T Laboratories, FASTAR restores ser-

vice lost to cable cuts in a few seconds, compared with the hours it used to take. Only AT&T offers FASTAR. Considering that independent surveys show the average cost per incident of downtime is \$320,000, FASTAR reliability represents money in the bank.

Not resting on its laurels, AT&T is implementing FASTAR II as part of its complete core network upgrade. The upgrade will couple second-generation SONET (Synchronous Optical Network) transport technology with ATM switching technology.

**SWITCH IT YOUR WAY** In addition to AT&T's demonstrated reliability, the company's ATM customers reap the benefits of bandwidth-on-demand with AT&T's ATM Switched Virtual Connections (SVCs). This feature lets

customers establish real-time connections to any of their network destinations using a wide range of connection speeds and ATM service classes. Customers can make connection bandwidth available whenever and wherever it's needed to support an application. Once the application completes, the connection is released and network bandwidth becomes available for the next application.

SVCs also offer scalability to large networks with many ports and a high degree of interconnectivity. For example, to fully connect 20 network sites with Permanent Virtual Connections, a total of 190 PVCs would be required. Using SVCs, connections to and from any of the 20 sites can be set up on demand, with the connections terminated once calls are complete. In this way, SVCs offer unprecedented scale and flexibility—and they are available only from AT&T.

**THE INTEROPERABILITY FACTOR** Many companies have large investments in frame relay—still very suitable for non-bandwidth-intensive applications—yet have other applications crying out for the bandwidth of ATM. With the world's largest frame relay network and the market share lead in both frame relay and ATM services, AT&T offers unrivaled experience in helping customers integrate these high-speed packet services.

Leadership. Experience. Reliability. There are no substitutes when your ATM network demands scale, flexibility and interoperability. No matter what your application, from the high-speed transfer of machine tool blueprints to real-time surgery teaching tools, AT&T is the provider of choice.

**AT&T is the clear ATM leader in the United States, with more than 30% more market share than its nearest competitor.**



EYE ON THE CARRIERS

# A rocky start for E-rate?

**T**he Federal Communications Commission last week hired a chief technologist to inject some technical sophistication into its rulings. Unfortunately,

nately, the appointment may be a year too late.

The FCC already has unleashed a technology disaster-in-the-making called E-

rate that's likely to cost you and your company money. Originally scheduled to begin on Jan. 1 but now certain to be delayed, it's based on a hopelessly non-real-world understanding of what makes computers and networks tick.

E-rate is the program President Clinton and Vice President Gore are referring to when they say they want every class-

room connected to the Internet by the year 2000. It grants elementary and secondary schools a discount on carrier services, including not only Internet access but also a raft of other offerings.

The program has generated huge interest and controversy. Schools and public library systems, which also are eligible, naturally are clamoring for the discounts. Critics complain that the federal government shouldn't mess in an area where thousands of local school boards are already heading. Some critics also carp that the link between computers and kids' learning is overblown anyway.

But the story goes beyond that. In thrall to its imagined newfound leverage over technology and society, the FCC cooked up a new entity called the Schools and Libraries Corp. (SLC). The job of the new company is to establish a national Web-based system for schools to post their requests for proposals for discount-eligible services. (Schools must competitively bid out the services to get the discount.)

You'd think the SLC would be headed by an electronic commerce expert. No such luck. In late October, the SLC hired a Washington lawyer, of all people, as CEO. Apparently overwhelmed by the job ahead, SLC CEO Ira Fishman now has told his board that the bidding system won't be ready until Jan. 12 at the earliest, though the discounts will be retroactive to Jan. 1.

That's a move that has carriers rumbling in discontent, while user groups moan about a pending increase in the monthly subscriber line charge on phone bills to pay for all this.

I'm sure you can see the multiple time bombs here. Because the FCC has authority over carriers and not over computer hardware and software vendors, it ordered discounts on Internet access, not PCs and servers. But no one has given any thought to the other big cost involved: people. If Fortune 500 companies are having trouble hiring Novell- and Microsoft-certified technicians, who's going to be there to fix the network connection when it breaks in Mrs. Throttlebottom's third-grade class? And the whole concept of pilot programs, beta testing and version upgrades seems to be totally foreign to the E-rate advocates. A nationwide electronic commerce system for bidding on local school contracts is going to emerge full-blown on the World Wide Web on Jan. 12 with infinite scalability, low latency, flawless downlinks and uplinks to relevant databases? Give me a break.

Systems integrators, rev up your engines. It could be time for a visit to FCC Chairman Bill Kennard if this whole thing falls into chaos.

*Rohde is Network World's senior editor of Carriers & ISPs. He can be reached at david\_rohde@nww.com.*



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# Internet

# Moving to a Million

What can you  
do to lighten  
the load?

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ALSO INSIDE CGI programs chug away • Handbook: Dynamic HTML • Review: Netiva Software's visual database development tool





e-business





# HOW TO HANDLE FIFTY MILLION UNEXPECTED GUESTS.

The only thing faster than word-of-mouth advertising is word-of-e-mail advertising. A positive reputation in cyberspace can bring you millions of new customers; a bad rap spreads ill will at the speed of light.

When you start sending millions of customers at a time to your Web site to do more than browse, you have to be concerned about the quality of their experience. Too much demand, and the performance of your Web site can slow to an annoying crawl (this is bad). Way too much demand, and users won't be able to connect at all (this is terrible). e-business, after all, is about interactivity – buying, selling, customer service, etc. – and if customers can't get through, they can't interact.

This is why scalability is a major issue for any business thinking seriously about becoming an e-business. Scalability is simply the ability to easily increase the capacity of your Web site – to handle more visitors or unexpected spikes in volume.

IBM designs scalability into all our Web technology – hardware and software. So if your site gets 100 million hits when you expected only 50 million, you can adapt quickly. As we've done with some of history's most heavily trafficked Web sites: the 1996 Atlanta Olympic Games (189 million hits/17 days); the U.S. Open Tennis Championships (70 million hits/14 days) and Deep Blue™ (74 million hits/9 days).

Scalability is just one e-business problem we can help you solve. We've helped thousands of businesses move their core processes to the Web to lower costs, improve customer service and actually sell things. To keep up with the latest IBM solutions, bookmark [www.ibm.com/e-business](http://www.ibm.com/e-business). Or call us at 1 800 IBM 7080, ext. NC33.



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screening, intrusion detection, network address translation, etc.—be incorporated  
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Are all IP services supported out-of-the-box including complex multimedia  
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Is easy integration with my company's choice of best-of-breed security  
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# IntraNet

December 1997  
Volume 2, Number 12

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As intranets hurtle toward a million pages of content, their managers face some mighty technical and administrative challenges. Here's a look at how some intranet managers handle the task of running huge and hugely popular internal Webs.

### 18 **Coffee with VINNIE**



Percolating interest in the company Web remains a challenge for intranet team members at Volkswagen of America, Inc. To brew up excitement about their intranet, named VINNIE, they've turned to periodic cybercafés.

### 20 **CGI chugs away**



The Common Gateway Interface may not always be used for the snazziest of Web applications, but it gets the job done. Intranet managers still find a lot of life in CGI programs, particularly for querying databases and filling forms with data.

### 25 **A pushy fellow**



Delivering the right information to the right person at the right time is the mission driving "push" product vendor DataChannel, Inc. In this Q&A, CEO Dave Pool tells us why every intranet needs a little push and how companies can better pull together useful information.

## DEPARTMENTS •

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Your virtual connection to newsbits, opinion, insight, humor and other marginalia from planet intranet.

### Handbook: Dynamic HTML 10

Intranet builders anxiously awaiting this next-generation HTML better temper their enthusiasm. A standards-based version might not be coming for at least another year as the World Wide Web Consortium hammers out the differences between Microsoft Corp.'s and Netscape Communication Corp.'s implementations.

### Ask Dr. IntraNet 10

This month the doctor advises how to set up directory structures for Microsoft's FrontPage in NT and how to reduce the amount of IP broadcast traffic on intranets.

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The latest batch of Java application development tools, complete with support for objects and other nifty features, makes custom coding far less onerous.

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Netiva's use of proprietary, non-Java code knocks the tool off target in the active market for visual database development products.

### IntraVert: Reducing stress and keeping your staff 27

Columnist Mark Gibbs proposes these basic rules for keeping the intranet and, by default, company employees stress-free: Know what data is coming in. Direct where the data goes. Control what information is extracted from the data.

## From the Editor

It only seems appropriate that in closing 1997, our first full year of publishing *IntraNet*, we take a look at the stature of corporate Webs today.

When we launched our inaugural issue in June 1996, we faced a challenge finding formal intranet activities in any but the most technically inclined companies. Most businesses hadn't yet figured out that they could tap Web technologies for internal operations.

Times certainly have changed. Most good-sized companies today, no matter the industry, have an internal Web.

But I'm not sure that anyone — even companies that were entrenched in TCP/IP and the Internet a year and a half ago — could have foretold the shape of intranets today.

Some companies run hundreds, if not thousands, of Web servers and hold browser licenses for tens of thousands of users. The number of static intranet pages mounts daily, with some companies hosting a million or more. And that doesn't take into account the number of pages created on the fly in response to users submitting queries to back-end databases.

As the increasingly dynamic nature of intranets shows, applications are maturing rapidly, too. In the past year and a half, we've charted the progression of intranets from their initial use as a means of disseminating information to a way of bettering business by sharing knowledge among employees, business partners and customers.

1998 is sure to usher in another round of changes, as companies hone their intranets to support business objectives. I'm looking forward to your stories of Web-based collaborative teamwork, workflow enhancements, transaction processing and other business-enhancing intranet applications.

— Beth Schultz, executive editor  
(bschultz@nww.com)

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COVER ILLUSTRATION BY LARRY GOODE

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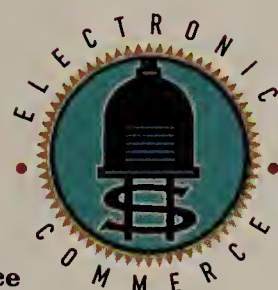
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## ISPs usher in electronic commerce

Business-to-business electronic commerce may get a little easier with the help of your Internet service provider, according to a recent report from market research firm ActivMedia, Inc. ([www.activmedia.com](http://www.activmedia.com)).

The firm, in Peterborough, N.H., found that 40% of ISPs offer electronic-commerce hosting services and another 17.6% soon will bring such offerings online. The goal is to make it easier for businesses to offer online transaction processing.

ActivMedia also found that online sales average \$999 per transaction. Although that amount includes some consumer purchases, it indicates that buyers are becoming less concerned about the security of online purchasing.

## Mature intranet mindset

Think intranet applications, not intranet.

That's the mantra research firm Nextera Enterprises LLC would have you recite to get into the right frame of mind regarding the company Web. As such, it's the message the Lexington, Mass., firm delivers in its recent report, "Adding Value Through Intranet Applications."

Probing into the use of technology for knowledge management, Nextera consultants learned that people tend to think of an intranet primarily as a single utility, says Ron Bohlin, chief operating officer.

"People were focusing on the connectivity of the intranet rather than on what it did. We saw intranets more as applications of the technology, so we were interested in the different ways people were taking advantage of the technology to reach business objectives," Bohlin says.



Among the primary conclusions Nextera drew from its research are:

- Intranets typically start with information dissemination, then evolve to meet specific objectives and complex functions, such as collaborative work.
- The intranets regarded as having the greatest business impact tend to have their objectives, intended users, information content and capabilities clearly defined.
- Content management is seen as the most significant initial issue to deal with.
- Few companies have much technical difficulty in implementing or maintaining intranets once the network infrastructure is in place.

As much attention must be given to management and organizational issues as to the technology.

The Nextera report is available for \$895 at [www.nextera.com](http://www.nextera.com) or by calling (781) 860-9465. The company also plans an updated version sometime next quarter.

## Swapping knowledge

Does KPMG Peat Marwick's browser change reflect company personality?



Allan Frank (left) gave KPMG Peat Marwick's browser business to Netscape when he was the firm's chief technology officer. Roger Siboni, chief operating officer, decided Microsoft deserved the business instead.



The adage "It's not what you know, it's who you know" apparently applies to intranets — at least at KPMG Peat Marwick LLP.

The New York consulting firm recently dropped its commitment to use Netscape Communications Corp.'s Navigator browser, instead issuing Microsoft Corp.'s Internet Explorer to its 80,000 users. The technology changed when the firm's personnel did.

Under former Chief Technology Officer Allan Frank, KPMG Peat Marwick was anchoring an existing groupware product with Netscape servers on its intranet and running Navigator on desktops ("Harvest-

ing knowledge," January, page 31). Frank left in January — days after giving Netscape the contract — to start a knowledge management consulting group.

Frank's departure opened a seat for Microsoft, said sources at the software giant. Frank wouldn't sway its way, but Chief Operating Officer Roger Siboni did.

Microsoft sweetened the deal beyond Netscape's means by investing in KPMG Peat Marwick's technical consulting organization. Such a pairing helps Microsoft, which needs to provide systems engineer-level consulting to capture enterprise accounts and move beyond its early desktop orientation.

In a recent interview with *IntraNet*, Siboni spoke of a knowledge organization's need to deal with "the alignment of knowledge management into strategy and to make a cultural transformation when necessary" ("Knowing it all," August, page 17). That apparently means swapping browsers, too.

## Tips for serving a tough user base

Novell's superintranet survives Comdex.

The massive Comdex/Fall '97 trade show held in Las Vegas has come and gone, but the memory of its intranet lives on.

Bay Networks, Inc., Compaq Computer Corp. and Novell, Inc. joined forces to build an intranet that would serve information to the 300,000 or so users attending the show. The intranet, named Connecting Points, ran Novell Directory Services, GroupWise, IntranetWare and BorderManager on Compaq ProLiant servers and workstations. Bay Networks hubs and switches handled the traffic flow.

Connecting Points handled more than five million messages during the week of Comdex, says Novell's Randy McDonald, who was technical marketing director for the intranet.

McDonald took away a few lessons from his experience. They are:

- Have plenty of backup and redundancy.
- Use frequent caching to speed processes.
- Plan ahead.
- Consider your environment: Make sure you can keep equipment cool and protected.
- Pick strategic partners that will help optimize the equipment.
- Try to prepare for all the what-ifs.



# Dynamic HTML: A useful standard remains elusive

BY TIM BRAY

When we started hearing about dynamic HTML approximately a year ago, industry watchers were amused by all the vendor hoopla.

Why? Because the two leading browser vendors, Microsoft Corp. and Netscape Communications Corp., couldn't even agree whether to capitalize the "D" in "dynamic,"

let alone anything else.

In recent months, however, the vendor noise has died down and dynamic HTML is maturing, albeit slowly.

## Why browsers are boring

Intranet builders who are trying to make their Webs faster, smarter and better are excited about the potential of dynamic HTML — it should be a considerable weapon in the fight to conquer browser boredom.

The browser boredom problem exists because Web pages mostly just stay still. Today's Web pages don't interact like a spreadsheet or word processor display or even a \$29.95 video game. Users want pages that are more interactive, animated, interesting and, in a word, dynamic.

Today's browser enhancing technologies, such as Java, JavaScript, JScript and ActiveX, aren't enough. Sure, you can write a Java applet or an ActiveX Control and load it into a Web page, but in that code, you can't access or change the rest of the page contents. Can you sort the rows of a table? No. Validate user input against a local database? No. Generate a dynamic table of contents? No. Turn text red when the mouse is over it? No.

And while you can achieve some visual effects with JavaScript, you have to program it twice, because the Netscape and Microsoft implementations are incompatible. And while you can construct whole user interfaces with Java, it is just too hard. Dynamic HTML attempts to solve these problems.

## Just the facts

Dynamic HTML is about making the contents of Web documents accessible to scripting languages so HTML documents can modify themselves or be modified by external or embedded programs. It's a modified form of HTML combined with Cascaded Style Sheets

(CSS) and the Extensible Markup Language (XML).

Unfortunately, dynamic HTML implementations from Netscape and Microsoft differ significantly. I haven't seen a single example of code that will do anything interesting with either of them. Oversimplifying immensely, one could say that the Netscape version of dynamic HTML is cleaner but that the Microsoft implementation does more.

The Netscape version is JavaScript oriented. This both limits it, in that there's no obvious way to use it from a Java applet or from C++ code, and clarifies it, in that every function has a straightforward definition.

The Microsoft version is a fairly large API library, giving access to most parts of a page and to its associated CSS information. It can be used from C++, Java, JavaScript and, of course, ActiveX, OLE and Visual Basic for applications.

Microsoft's dynamic HTML has a feel that will be familiar to Visual Basic veterans and abhorrent to those who don't share the Microsoft API design approach. It also has the feel of pulling together the result of a half dozen design efforts.

There are some things you can do nicely in both flavors of dynamic HTML — with a different syntax for each. For this reason, I advise Web designers in general not to invest too

much time and effort in dynamic HTML — yet. It's unacceptable that Microsoft and Netscape are marketing incompatible versions for something this important. Of course, on an intranet, you might decide that since you control the environment, it is worth jumping in early.

For the world at large, the World Wide Web Consor-

tium (W3C) is working on a standard, called the Document Object Model (DOM), to make dynamic HTML real and interoperable. Nobody can develop standards as fast as Microsoft and Netscape can build products, but the W3C is quite a bit faster than older standards organizations such as the International Standards Organization and the Internet Engineering Task Force.

In fact, the DOM activity group already has produced the first draft of its work. Although it's just an early draft, the document gives a feel for what the dynamic HTML of the future will be like. The W3C intends for it to cover CSS, HTML and XML. Microsoft and Netscape are participating in the standards process.

Go online for more information on dynamic HTML, including:

- Microsoft's and Netscape's dynamic HTML documentation
- Information on the W3C's DOM standard
- XML examples

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## ASK DR. INTRANET

Please step in and lie down, Steve Blass is in for consultations. He understands the strains felt by people developing and managing intranets. Send your problems to [dr.intranet@paranet.com](mailto:dr.intranet@paranet.com).

Is there a way to set up directory structures for Microsoft Corp.'s FrontPage in NT, giving appropriate and specific permission to each Web author's target directory?

Via the Internet

Letting multiple authors securely publish their own portions of the Web through FrontPage poses quite a challenge. Instead, you could let a Webmaster place content.

Publishing a Web with FrontPage creates a subdirectory for the files in the Web server's root directory. You can create, but not nest, multiple Webs. This means you get just one layer of subdirectories.

Losing directory hierarchy wouldn't be so bad if FrontPage controlled publishing access independently for each Web, but access privileges are inherited from the server's top-level Web. Accomplishing your task would require separate Web services on different port numbers using unique server root directories.

While it might be easier to trust departmental Webmasters, you can run multiple copies of FrontPage's personal Web server and use port numbers in your links. Follow these steps for each department:

- Copy /FrontPage Webs/Server/conf/\*.cnf to a new server root directory.
- Edit httpd.cnf in this directory to show the new port number.
- Edit srm.cnf to show the new ServerRoot.
- Run `vhttpd32 -f<newServerRoot>/conf/httpd.cnf`.
- Install the FrontPage Web server extensions.

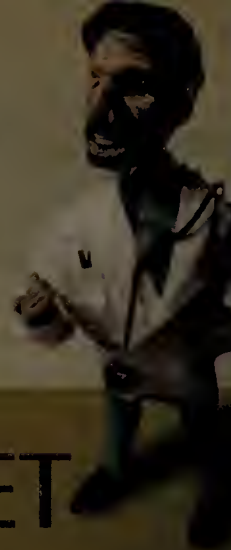
On boot up, my Sun Microsystems, Inc. machine sets up a broadcast address. What is that and how can I use it to make my intranet work smarter?

Via the Internet

A broadcast address is made up of an IP address' network part and a host part of all ones. The corresponding subnet mask is a network part of all ones and a host part of zero. This address represents all devices on the broadcast network, and each of these devices processes every broadcast packet.

You can make your intranet work smarter by aligning broadcast addresses and subnet masks with physical broadcast domains and routing boundaries to minimize the amount of packet processing.

Blass is a network architect at Houston-based Sprint Paranet, a distributed computing systems services provider.





## Beyond HTML

Since the Web has been overwhelmingly based on HTML, when the time came to make it dynamic most people assumed this meant building interfaces to HTML. But as soon as programmers get a view into the guts of an HTML page, some problems become apparent.

For an example, point your browser at [www.amazon.com](http://www.amazon.com) and do a search for Homer's *Odyssey*. You'll get a nice listing of 52 available editions. For each, Amazon provides useful information such as the publisher, translator, price, how long delivery takes, and whether the edition comes as a book or an audiocassette.

This would be a wonderful page to make dynamic — browsers could sort the entries so you could see, for example, which editions on audiocassette are available quickly. But the HTML version of this page (do a View Source to see) is simply HTML code, as shown for this listing: `<b><a href="/exec/obidos/ISBN=0674995627/7194-4397031-075274">Homer : The Odyssey : Books 13-24 (Loeb Classical Library, No 105) Vol 2</a></b> er, et al / Hardcover / Published 1995 <br> Our Price: $18.95.`

If you're a programmer and wanted to sort this by price and publishing date, you'd have to write code to pick the listing apart, figure out (based on the word "Published" and the dollar sign) where the price and date were and then do your work.

This programming task is a lot more difficult than it should have to be, and where XML fits in (see *IntraNet*, June, page 10).

This example demonstrates most of the important things about XML: You can invent your own tags, but you have to be really careful about balancing your begin and end tags. XML, unlike HTML, doesn't predefine any tags; you make your own. For a browser to display XML, it will need CSS or another style sheet.

Here's an XML version of the same Amazon listing: `<record><bookhref="/exec/obidos/ISBN=0674995627/7194-4397031-075274"><author>Homer</author><title>The Odyssey : Books 13-24</title><publisher>Loeb Classical Library</publisher><pubnum>No 105 Vol 2</pubnum></book><shiptime2-3 days</shiptime><format>Hardcover</format><pubdate>1995</pubdate><price>$18.95</price></record>.` If you want the price, you simply find the `<price>` tag, for example.

This kind of program is easy to write and efficient to run. It's also more robust.

Again, keeping with this example, Amazon probably changes the look and feel of its display regularly. This would break your code if you were working with raw HTML. With XML, it can change the display as much as it wants. As long as you keep using `<price>` and `<pubdate>`, your code will continue to work.

The point is: The DOM will be useful with HTML, but it'll be wonderful with XML.

## A cautionary word

There is good reason to think we are at least a year from having a widely deployed, vendor-neutral DOM. First of all, the task of sawing off the differences between the Netscape and Microsoft

world views is going to be politically difficult, given their competitive stance and the size of programmers' egos.

Second, APIs are hard to get right, even when everyone agrees.

Third, browsers are big, complicated programs. It'll take vendors a while to implement whatever the DOM committee comes up with. It will then be another while before those releases get

out there onto users' desktops. In fact, by the time the DOM is ubiquitous, everyone may have forgotten the hub-bub over dynamic HTML.

Bray has a consulting practice, *Textuality*, in Vancouver, B.C. He can be reached by phone at (604) 708-9592, by e-mail at [tbray@textuality.com](mailto:tbray@textuality.com) or on the Web at [www.textuality.com](http://www.textuality.com).

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# Java tools perk up

## Vendors add support for objects and other accessories.

BY MARK GIBBS

Adding serious business applications to an intranet usually requires writing custom code. That task is becoming less onerous for developers working with Java, thanks to a new crop of application development tools.

For example, SunSoft, Inc., a division of Sun Microsystems, Inc., recently released Java Studio, a graphically based integrated development environment for building applications from Java applets and JavaBeans.

Java Studio, an object-assembly system, lets developers create applications without programming. The system features a window for viewing and testing applications and comes with a set of JavaBeans that provide functional building blocks.

Developers can add and export JavaBeans. These capabilities simplify application design and allow for code reuse. Java Studio runs under the Sun Solaris and Microsoft Corp. Windows 95 and NT operating systems.

SunSoft offers Java Workshop for those developers who want to get under the hood and program in Java rather than just assemble objects. This visual development tool is a vast improvement over the Java Development Kit (JDK), which has a brutal command line interface.

Java WorkShop offers an easy-to-use tool set for building JavaBeans, applets and applications; supports Solaris, Windows 95 and NT, HP-UX and SCO UnixWare operating systems; and includes Visual Java GUI builder, a compiler, profiler and debugger.

IBM's VisualAge for Java is another visual rapid application development (RAD) tool for Java. Running under Windows 95 and NT, VisualAge for Java offers drag-and-drop applet layout and linking of controls and resources. The system also includes version management functions.

User reviews of VisualAge for Java are enthusiastic. In particular, they cite power and ease of use as the product's strengths.

### Factory for code

Rogue Wave Software, Inc. offers another part of the framework for rapid development with the release of JFactory, a visual interface builder for Windows 95 and NT, Solaris and IBM's OS/2. JFactory is a design environment for building the interface to Java applications and applets rather than the contents.

JFactory includes a project manager and drag-and-drop controls for buttons and menus. Developers specify events linked to controls or code. When the design is complete, JFactory generates code and then invokes either the compiler in Sun's JDK or another vendor's implementation.

Symantec Corp.'s Visual Café, another highly regarded product, has a graphical development environment, source code editor, debugger and class browser. Visual Café is supported on Windows 95 and NT. Café Studio, the visual component, has a slick inter-

face that some reviewers rate as the best in the Java RAD market.

Visual Café comes in three versions. The Web Development Edition, a starter version, includes an interactive development environment, an HTML authoring tool and more than 100 JavaBeans. The Professional Development Edition adds features such as incremental debugging, drag-and-drop JavaBeans and Java applets, wizards and class libraries.

The Database Development Edition is for building Java applications with database connectivity. This version includes Symantec's dbAnywhere Server, Netscape Communications Corp.'s FastTrack

Web Server and Sybase, Inc.'s SQL Anywhere relational database.

Borland International, Inc. offers JBuilder, which essentially is a version of the company's Delphi client/server tool that creates Java application code.

JBuilder supports Java 1.1 and the JavaBeans specification, as well as Sun's Java Foundation Classes, Microsoft's Application Foundation Classes and its own component libraries.

The tool comes in three versions: JBuilder Standard, an entry-level product; JBuilder Professional, oriented to database development; and JBuilder Client/Server, the enterprise version. The latter, scheduled to ship by year-end, will include Borland DataGateway for Java, middleware that provides Java client access to corporate databases.

JBuilder runs on Windows platforms.

### On the horizon

Oracle Corp. continues to thumb its nose at Microsoft, this time with a three-tier suite of Java development tools. Oracle's plan is to support the tools alongside its proprietary programming products.

First off the block is this quarter's scheduled release of a Java client tool that hooks into Oracle databases. Next year, Oracle plans to support Java-based objects for business use and allow them to be stored in its Developer/2000 and Designer/2000 design repository tools.

Curiously, one of the key aspects of Java programming, the capability to reuse objects, will not be available as part of Oracle's tool kit until 1999.

With sophisticated tools such as the above-mentioned in hand, intranet managers will certainly bring more Java-based, mission-critical applications onto their Webs. ☺



### JAVA DEVELOPMENT TOOLS

Here's a sampling of Java programming products, as mentioned in this article.

Vendor	Contact information	Product	Pricing
Borland Scotts Valley, Calif.	(408) 431-1000 www.borland.com	JBuilder	\$799 for the Professional edition, \$100 for the Standard edition, pricing for the Client/Server package will be announced upon release
IBM	(800) 426-2968 www.software.ibm.com	VisualAge for Java 1.0	\$119 for the Professional Edition, \$1,995 for the Enterprise Edition
Oracle Redwood Shores, Calif.	(415) 506-4073 www.oracle.com	Designer/2000 and Developer/ 2000	\$5,995 each
Rogue Wave Software Corvallis, Ore.	(541) 754-2311 www.roguewave.com	JFactory 1.1 (JFactory 1.0.1 for HP-UX)	\$795
SunSoft Mountain View, Calif.	(800) 786-7638 www.sun.com/studio/	Java Studio 1.0	\$99 per user (\$189 bundled with Java Workshop until February)
Symantec Cupertino, Calif.	(800) 441-7234 www.symantec.com/ domain/cafe/deved/	Visual Café 2.0	\$100 for the Web Development Edi- tion (Windows), \$300 for the Profes- sional Development Edition and \$500 for the Database Development Edition





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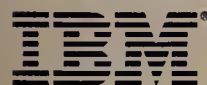
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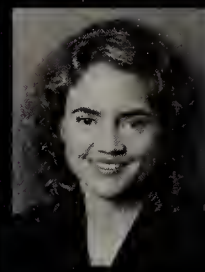
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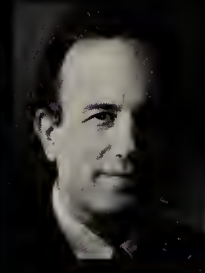
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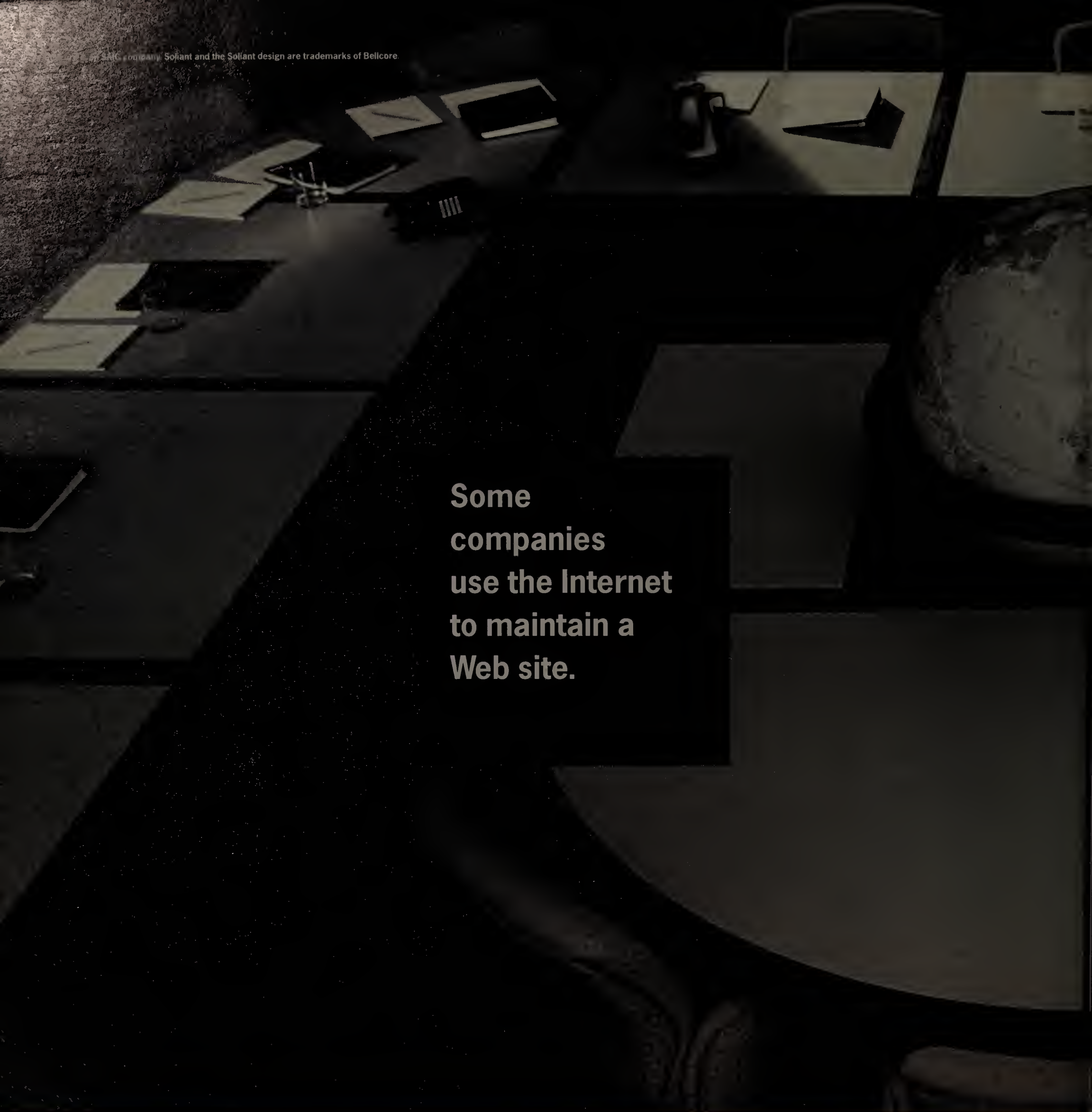
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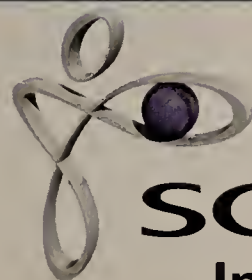
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# Netiva misses the mark

Price and a non-Java implementation do in this database development tool.

BY TOM STEARNS

Developing database applications is a difficult task, made more so when it comes time to move such applications to the World Wide Web.

Netiva Software, in Campbell, Calif., aims squarely at this market with Netiva, its visual database development tool.

The database application market is a moving target, however, and Netiva misses the mark in comparison with Java-based visual development tools such as Borland International, Inc.'s JBuilder, Sybase, Inc.'s PowerJ Enterprise and SuperCede, Inc.'s SuperCede. Unlike these companies, Netiva uses proprietary, non-Java code.

Netiva's strongest point is its implementation of database features, with two- and three-tier client/server support, commit/rollback

and two-phase commit built in. Netiva handles database connectivity through Microsoft Corp.'s Open Database Connectivity (ODBC) and a number of legacy database drivers for dBASE, Paradox and even comma-delimited text.

Data within Netiva is manipulated using the company's proprietary but straightforward macro language. This language is patterned on BASIC with a number of built-in data-centric features. These make Netiva's macro language simple and powerful.

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guage. This language is patterned on BASIC with a number of built-in data-centric features. These make Netiva's macro language simple and powerful.

## Extra step

The pages you create visually must run on a proprietary Netiva server that coexists with your Web server.

Clients are Web browsers that need to load a Netiva component before being able to run Netiva applications. This can lead to a headache about which developers of Java-based databases need not worry.

Netiva Software licenses the server on a concurrent connection basis; the server monitors licensed connections.

At \$4,999 for a two-connection license, Netiva is expensive. This is without factoring in the training you'll need to get your development team up to speed on this proprietary implementation.

The costs compare poorly with competing products. For example, Sybase's PowerJ, a visual Java application development tool with a full complement of database support, costs \$3,000 less. And developers familiar with Microsoft's Visual Basic or Borland's Delphi will find it easy to pick up.

Applications created in Java environments are royalty-free and run on any Java-compliant browser or Java Virtual Machine.

## Under the glass

While it is a visual tool, Netiva does not emulate the standard look of Visual Basic (see graphic). This divergence makes it different enough to require some concentration for mastery of the tool.

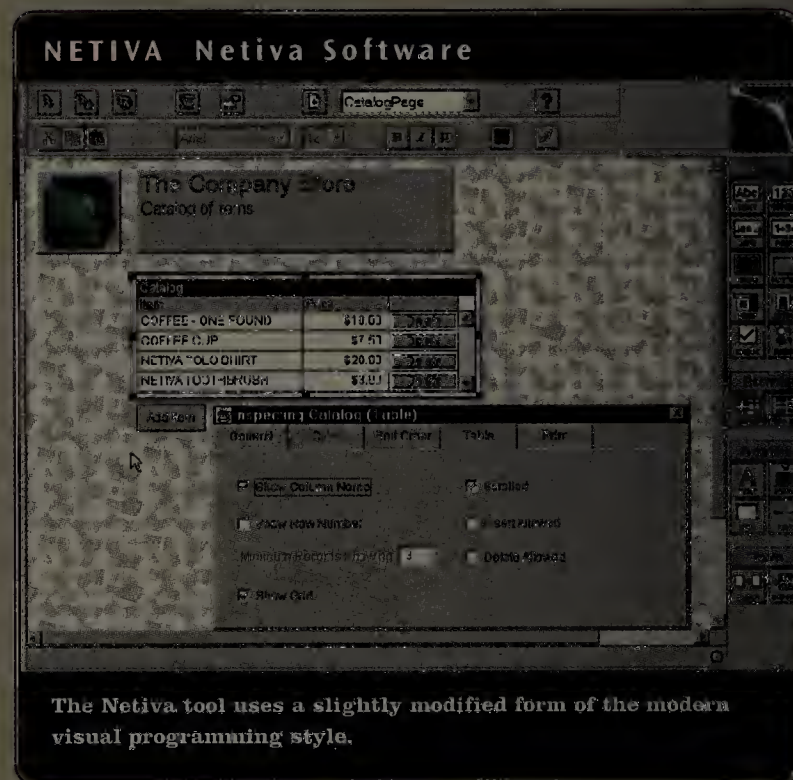
I found Netiva quite easy to use for connecting to some dBASE files, but the dBASE driver lacked support for multiuser access. This limits its use to nonlive data tables. In other words, other applications cannot access the data at the same time as Netiva.

## PRODUCT CAPSULE

<b>Product:</b>	Netiva Version 2
<b>Vendor:</b>	Netiva Software, Campbell, Calif.
<b>Contact information:</b>	(408) 379-2100 www.netiva.com
<b>Price:</b>	\$4,999 for two connections
<b>Pro:</b>	Broad database support, including that for two- and three-tier systems
<b>Cons:</b>	Expensive; nonstandard (non-Java) approach; visual development environment differs from familiar Visual Basic model

Netiva's support of other database servers through ODBC is excellent. Two specific areas of native Netiva capabilities impressed me.

First is its support for two-tier, traditional client/server architectures, as well as the more modern three-tier model. In the latter, a transaction server sits between the client and database server.



The Netiva tool uses a slightly modified form of the modern visual programming style.

The other impressive feature is Netiva's support for commit/rollback, which is the capability to submit a set of actions to a database and be sure that the entire transaction is either completed or deleted. This is required for serious database work and it's nice to see that Netiva addresses this need.

Performance on my Windows NT client, a 266-MHz Pentium II with 64M bytes of RAM, was good, as it should have been.

Netiva installation is straightforward and quick. When you first run the program, you can view a tutorial that provides a good introduction to Netiva programming.

However, the Netiva tutorial is clumsy in its execution — it runs in a Web browser. Finding a way to see both the tutorial and Netiva is difficult, even on my 1,280 pixel-by-1,024 pixel desktop.

The tutorial is repeated in a booklet titled *Zen of Netiva*. The other manual, a nearly 500-page user guide, is a comprehensive discussion of Netiva. The manual is indexed nicely and has several useful appendixes.

## In the end

In a vacuum, Netiva is a good product. In the current Java-laden atmosphere, however, Netiva gets tarnished.

Comparing Netiva to the current crop of visual Java tools leaves Netiva wide of the mark. It is expensive and proprietary, making it less appealing than other visual tools for creating Web database applications.

Stearns is a system consultant and author in Salt Lake City. He can be reached at tom@stearns.com.

## SCORECARD

Criteria	Rating
<b>Overall score</b>	<b>5.3</b>
Ease of use (20%)	4
Performance (20%)	5
Connectivity (10%)	8
Interoperability (10%)	3
Security (10%)	4
Database scalability (10%)	8
Installation (10%)	5
Documentation (10%)	7

Individual category scores are based on a scale of 1-10. Percentages are the weight given each category in determining the total score.



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# Coffee with

BY PEGGY WATT

*Intranet team members at Volkswagen's U.S. headquarters periodically host cybercafés to percolate interest in VINNIE, the corporate Web.*

Imagine you've just received a drawing from a telecommuter who portrays herself sitting at the bottom of a large funnel, getting flooded by the documents that people at headquarters keep pouring into it.

Dan Goussy got just such a drawing in 1995 when, as a reengineering consultant, he was helping Volkswagen of America, Inc.'s field staff adjust to a companywide reorganization. VW had closed its North American field offices and turned its remote staff into telecommuters.

In their isolation, the field workers were overwhelmed with information. The drawing helped Goussy get the picture. When he did, he headed straight to IT.

What Goussy wanted was help designing an electronic bulletin board system that would help the telecommuters manage the deluge. What he got was an intranet.

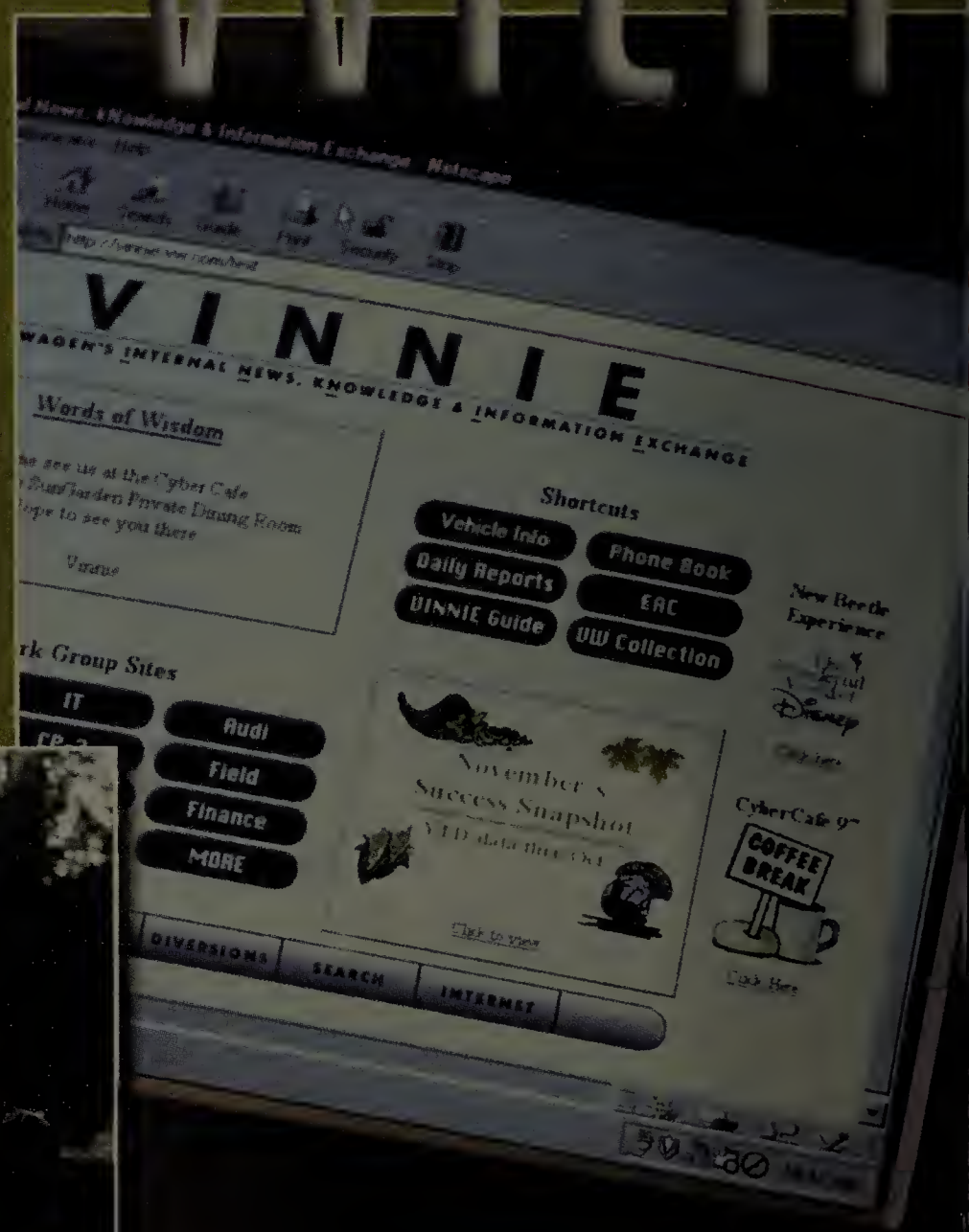
Jack Shafer, director of new technology, had just crafted the company's World Wide Web site. The men realized Web technology might answer VW's internal needs as well. They assembled a team — an interspecies group of marketing experts and technical staff, they joke — and launched Volkswagen's Internal News Knowledge and Information Exchange (VINNIE).

Earlier this month, to celebrate the intranet's first birthday, the team raised a few latte toasts to VINNIE. It hosted a cybercafé at VW's headquarters in Auburn Hills, Mich., and invited colleagues to drop in and get acquainted with the latest on the Web.



Intranet team members check out VINNIE one last time before opening the doors to Volkswagen's cybercafé. They are (from left to right): John Ferriby, Kara Wanger, Jack Shafer and Nick Panas.

Serving up espresso and cookies along with Web pages, the team demonstrated VINNIE, encouraged all VW employees to surf the corporate Web and previewed new features. Those include an application for ordering business cards and automated sign-up forms for training.



JON MURSAN



The goal, Goussy says, was to heat up employees' interest, which had been lukewarm during VINNIE's first year.

"We wanted to show each person something in VINNIE he or she didn't know was there," Goussy says.

VINNIE has grown from about 100 files to 1,300, but VW's 1,500 employees access it only about 1,000 times daily. Some do so directly from their desktops — the intranet launches upon boot up — and others access it from kiosks.

About 250 users stopped by during the three days the café was open, says Goussy, who has joined the IT department as intranet project leader.

Ironically, the cybercafé excluded the 300 field operations workers who were a primary reason VINNIE came online. Those employees, who Goussy

plans to target with more training, only use VINNIE sporadically. It's a challenge to reach them because their time is at a premium, and they're dispersed across North America, Goussy says.

Goussy's marketing and advertising background leads him to emphasize ease of use and communications on VINNIE. "We have been somewhat inflexible on site design. Having different [home page] designs would be like hiring a different ad agency for each of our lines of cars," he says.

So across the bottom of every departmental home page is a ribbon of links for comments, forms, a search engine, Internet access and diversions. But there is room for creativity.

For example, behind "Diversions" is a screen of interesting, but not necessarily vocational, internal and external

Web sites. For example, IT's Diversions page lists technical and vendor Web sites, plus the URL for *Dilbert*, the cartoon deity of IT, and the chocolate lover's page — one of Goussy's contributions.

VINNIE is largely a document library, with little database interaction.

For the document library, clicking on a category button activates a Common Gateway Interface script that launches Interleaf, Inc.'s Relational Document Manager (RDM). The program dynamically generates a list of files for the chosen category, drawing from Interleaf's document database, and the user clicks for viewing.

One person in each workgroup — the content manager — has RDM tools and can link files for access. Technician Nick Panas, another team member, designed an easy fill-in-the-blanks process for posting.

This coffee klatch was to catch new-

searchable, so such data might prove useful to someone looking for background on a project or for a colleague who speaks a foreign language.

### Blending talents

Over a typical programmers' feast — Chinese food — members of the VINNIE team kid about how they've converted the marketing guy into a techie. In fact, Goussy has become adept at HTML and is on the IT payroll, but other members of the team handle the bit-twiddling.

VW has three IT groups that must coordinate work: networking, consulting and the intranet/Internet team.

Panas and Shafer supervise script- and link-building and maintain Web-related equipment with IT's network staff. For VINNIE, VW uses Netscape Communications Corp.'s Enterprise Server Web server software running on a Digital Equipment Corp. Alpha Unix machine.

In addition to the Unix server, VW uses Microsoft Corp.'s Windows NT application servers. Netscape's Navigator 3.0 is its browser of choice.

VW had TCP/IP in place before VINNIE and is its own Internet service provider via T-1 lines. While the corporate Internet connection is fast, remote offices use lower speed dial-up services.

Because VINNIE is open to remote workers, security is an ongoing issue. Shafer claims his security philosophy follows a German proverb: "Trust is wonderful, but control is better."

The company has strong firewall protection and a series of routers to distribute incoming traffic around protected areas. IT also restricts access, allowing HTTP traffic, but not File Transfer Protocol or telnet sessions.

VW is building a demilitarized zone (DMZ) with two firewalls — one allows DMZ entry and the other protects the corporate LAN. When VW opens its intranet to partners, parts of VINNIE will go on the DMZ, Shafer says.

### Funnel vision

For VINNIE's second year, the intranet team is reassessing how to raise its profile and service to the field offices — the original target users.

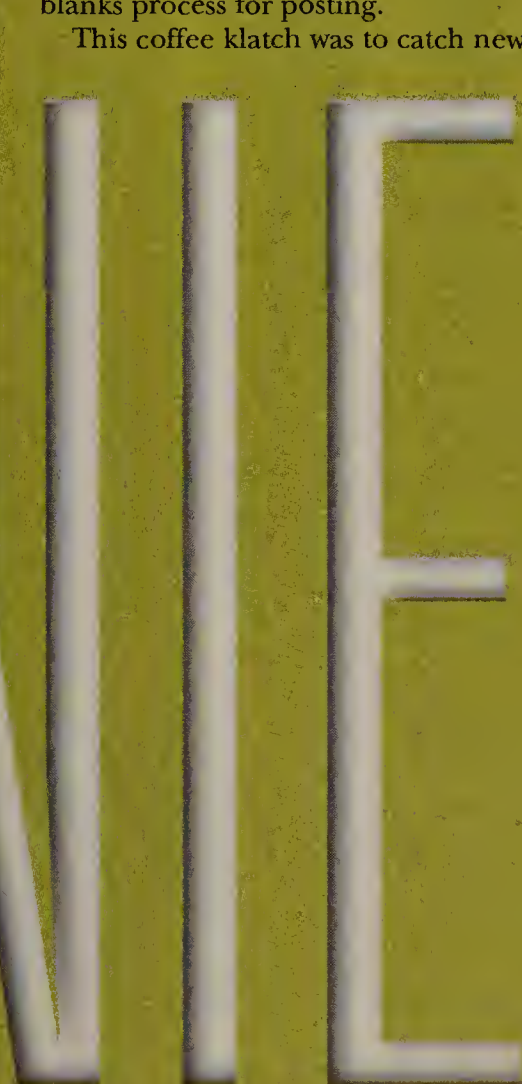
It plans to activate a "subscribe" feature on all the dynamic library pages so users can ask to be notified if a document or related files change.

Goussy is hopeful that the blend of talents behind VINNIE is up to the challenge of making the intranet mission-critical to field workers. "IT originally pushed the Web project," he says, "and now marketing and the whole company are pulling it." ☺

Go online for a walk through one of VW's intranet applications.

5102

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comers and encourage others to dig deeper into the Web. A slide show of tips flashed on a wall-sized screen, suggesting that visitors order VW parts online, visit the virtual VW museum, respond to an invitation to the holiday party or try dozens of other exercises.

Ever marketing, Goussy encouraged the coffee-sippers to do a little self-promotion with VINNIE's help. He asked employees to edit their password-protected personnel information in the online company phone book.

Employees are supposed to update not only the usual data — phone extension, e-mail address and title — but insert other useful information, such as previous jobs within VW, and miscellaneous skills and interests. All fields are



# CGI

*The Common Gateway Interface may not always be used for the snazziest of Web applications, but it sure gets the job done.*

With all the talk of Java this, virtual reality that, it's easy to lose sight of what often is the real intranet workhorse, the Common Gateway Interface.

The CGI does one thing exceedingly well: It shuttles information between Web servers and back-end applications, such as databases and e-mail systems. A CGI program takes standard input from a Web server and extracts the data, which it then passes to the back-end application, and vice versa. The end results are richer sources of data and vastly greater interactivity for Web clients.

CGI programs tend to be basic, even dull. But that doesn't mean they're not critical. Paving the way for a Web client to access a corporate database may not knock your socks off, but it's surely something users will love you for doing.

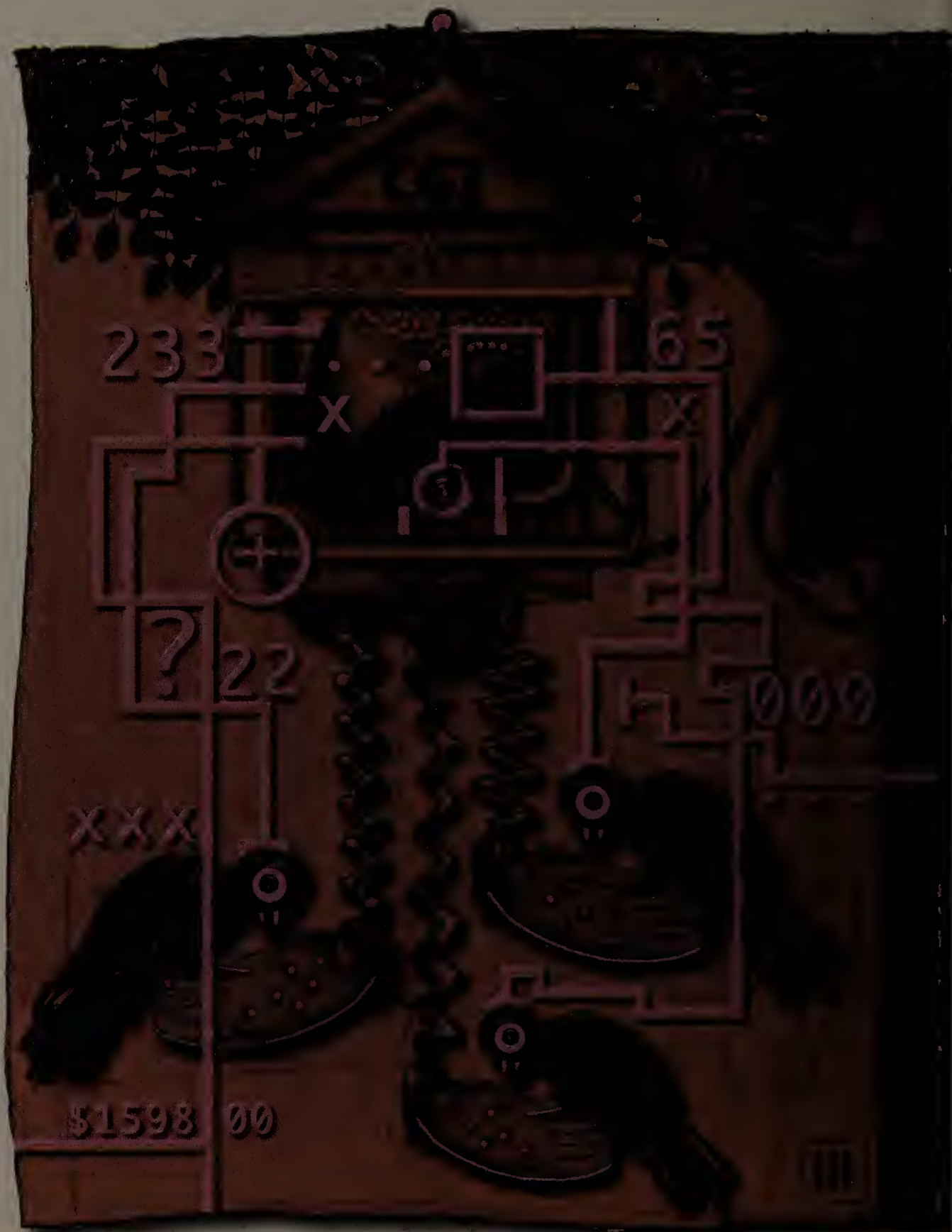
Admittedly, newer client-based scripting languages, such as Netscape Communications Corp.'s JavaScript and Microsoft Corp.'s JScript, are starting to displace many of the processes that usually are run as CGI applications. Nonetheless, many intranet developers still use the CGI to boost the functionality of their corporate Webs.

At Fruit of the Loom, Inc., in Bowling Green, Ky., for example, the CGI fit nicely with the intranet team's idea to allow employees to page managers from an intranet site.

The solution was pretty simple, says Webmaster Brian Ochs. "An HTML form has a list of those with pagers. You type in a message, and it sends a page and an e-mail."

Ochs adds that it only took about a half day to write the program using Allaire Corp.'s Cold Fusion Web development tool. The Cold Fusion code uses the CGI to connect the Web server to a database of pager numbers and an e-mail system.

*See CGI, page 26*



BY DOUG BARNEY

# chugs away



# MOVING TO A MILLION

BY PEGGY WATT

*IT tackles the hard, soft and ever-changing management issues of running huge and hugely popular internal Webs.*

**W**hen Northern Telecom, Ltd.'s intranet passed the million-page mark, its managers realized they had to get serious. Employees, actively encouraged by the IT department, had begun treating the intranet as a corporate asset. But, ironically, the intranet's overseers weren't managing it as one.

It's not that they weren't paying attention to it. They knew it was growing — after all, they were the ones posting templates, building database links and adding servers to keep up with user demand. They just hadn't yet identified it as a cohesive corporate asset, says Bill Holtz, vice president of global enterprise services.

Once IT realized how invaluable the intranet had become, Holtz says he began applying standard network management practices to run it. That meant, for example, regular backups and careful traffic monitoring that alerted managers to add servers when they were needed.

At Nortel, network administrators dispatch several Web crawlers to check links, but that is almost the only Web-

specific aspect of network maintenance operations. As part of its regular enterprise management routine, IT ensures that the routers are up and the links are functioning, Holtz says. It also measures capacity and usage across the corporate enterprise network and traffic crossing the proxy server to the World Wide Web. In addition, the department tracks the number and location of Web servers, how many pages exist and what major applications are running.

Although workgroups are allowed to set up their own Web servers, IT tries to keep tabs of the server population, especially since it handles enterprisewide backups. Intranet traffic doubled in 1996 and will probably do so again this year, Holtz says.

The management strategy appears to be working: CorWeb, Nortel's intranet, has swollen to 1,200 servers accommodating 45,000 users accessing 1.5 million documents. Broken down over CorWeb's eight years — it started in the beta-test days of the NCSA Mosaic browser and

Apache Web server — that's an annual increase of 187,500 intranet pages.

"I don't think we could have stopped [users from embracing CorWeb] even if we'd wanted to," Holtz says.

This scenario is becoming common on Webs everywhere. Embraced by

users, many intranets move toward a million pages of content.

The success is thrilling, but it comes with ever-increasing traffic, new storage demands and the need to frequently reassess the network infrastructure. The last thing intranet managers want



LARRY GOODE



is for network bottlenecks or aging equipment to slow the intranet's information flow.

So, for some companies, hitting the million-document milestone has forced network managers to reconsider the intranet architecture. Such was the case at Sun Microsystems, Inc., which moved from PCs to network computers (NC).

## TIPS FOR MANAGING A MILLION

- ▶ Delegate content creation and maintenance.
- ▶ Archive religiously.
- ▶ Use a good crawler or indexer and a robust search engine.
- ▶ Monitor bandwidth and forecast need.
- ▶ Install a standard directory structure.
- ▶ Anticipate problems: Use one of the new Web-oriented network monitoring tools to track usage.

In Sun's case, indexing the intranet took four days because of the proliferation of Web servers, says Chief Information Officer Bill Raduchel, who estimates that SunWeb contains more than two million pages. By giving NCs to most of the 36,000 intranet users, Sun could store Web pages centrally.

Several common practices appear among the Webmasters who are staying in step during their million-page marches. Holtz and his peers, for exam-

ple, follow good general networking administration practices and, when it comes to content, they delegate.

Like at Nortel, IT managers at GE Information Services, Inc. (GEIS), in Baltimore, Md., have empowered intranet users with the ability to update and refresh content. And GEIS goes even farther.

When a link breaks on the company's Global Village intranet, IT gets flagged. But the content manager has to fix the problem, says Wubneh Wubneh, manager of emerging technology.

"The intranet is independent, but centralized," Wubneh says.

As is typical for sizable intranets, IT programmers manage GEIS' corporate Web with custom tools. For example, GEIS built one tool for monitoring access. Intranet managers wanted to be able to identify usage patterns and measure response speeds.

The custom-built monitor automatically notifies administrators of status changes, such as when user traffic slows to a specified pace or when the number of people online hits a certain volume. Network managers note how often the intranet hits these milestones, adding servers or bandwidth accordingly.

Coopers & Lybrand, in New York, also took the customization route to

manage growth on its intranet, which comprises about 120 Web servers and 80 Lotus Development Corp. Domino servers. IT staffers worked with a consulting firm to codevelop Surveyor, a Domino application that generates automated surveys of usage habits, compiles responses and produces statistics.

"Our experience is that most commercial management tools don't adapt well to Domino, so we have had to build our own," says Tracy Beverly, director of intranet services. "We need solid statistics on which business units use the intranet most, and how."

The logs help determine, for example, whether the company should mirror frequently accessed sites or install faster pipelines for remote offices that frequently access particular databases.

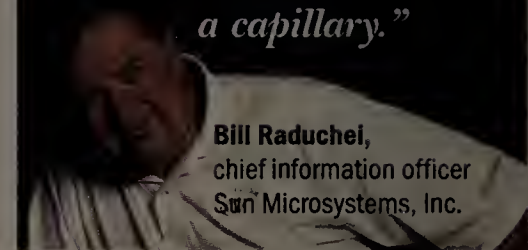
"Most of our users are remote, so we just kill them if we don't get some speed for them," Beverly says.

GEIS' Global Village also is typical of many large intranets in its trend toward virtual pages. After an intranet grows beyond a thousand, tens of thousands or even a hundred thousand static pages, dynamic pages take over. The largest intranets generate most of their pages on the fly, drawing information from corporate databases front-ended by a Web browser.

One intranet builder — Brett

*"It was taking us four days to index our intranet. And, it's bad networking practice to put*

*a Web server out on a capillary."*



**Bill Raduchel,**  
chief information officer  
Sun Microsystems, Inc.

CINDY CHARLES

Monello of Silicon Graphics, Inc. (SGI), in Mountain View, Calif. — argues that once an intranet hits about a quarter of a million pages, the numbers become moot.

At SGI, Monello's home-grown link-checker crawls constantly. It takes about one week to cover the Silicon Junction intranet, which serves SGI's 10,500 employees and has a half-million static pages.

"I don't have a goal of limiting the number of pages, but I'm concerned about what percentage of information requests can be met through the Web

**Admit it. This is what you'd like to do to hackers.**





and how efficiently," Monello says.

One of Monello's tactics has been to keep the number of prepared, or canned, reports low. Instead, users generate most Web pages dynamically, drawing from Web-connected corporate databases, so they get the most current information. They may pull personnel data from human resources databases or product information from the marketing groups, for example, and then plug the results into templates of their choice.

Monello estimates that instead of some 7,000 canned reports that used to reside on a LAN, Silicon Junction stores about 500 and generates the rest as needed.

Intranet managers use the same philosophy in overseeing The Boeing Co.'s corporate Web, which circles the globe linking roughly 110,000 employees to company headquarters in Seattle. The numbers are misleading — Boeing's Web hosts more than 350,000 static pages, but it's extremely dynamic, says Dick James, deputy program manager.

Boeing had 545 Web servers before merging with McDonnell Douglas Corp.; now the number is probably double that. The intranet did not change network management practices. "The visibility of the Web just brings into focus issues we've always

had," James says.

The technical library tracks links with a "Mom Spider" that crawls constantly, James says. Otherwise, intranet maintenance issues are the same as with any networking infrastructure. They include replicating data across servers, conducting regular backups and running more fiber.

## Same old answers

Network administrators for Hewlett-Packard Co., in Palo Alto, Calif., were prescient enough in 1989 to globally commit to TCP/IP; the company shares Boeing's sentiment.

"One lesson of a large intranet is that you build for continuous growth," says Joe Schneider, manager of technology infrastructure services at HP facilities in Fort Collins, Colo.

Today, HP's intranet links more than 400 sites worldwide and supports more than 100,000 PCs, about 20,000 Unix workstations and 2,000 Web servers. Although the network infrastructure keeps up with demand, Web documents — which Schneider says surely exceed one million in number — warrant watching closely for bandwidth and storage purposes.

"We've not just seen a growth in usage, but in the types of usage and types of information," Schneider says.

"For example, what would have been a 2K-byte [File Transfer Protocol] document two years ago is now 20K of HTML code."

Like his counterparts, Schneider's main management concerns are technology and content. "Especially when you give access to the World Wide Web, trying to anticipate all the factors involved in support is an ongoing challenge," he says.

For example, configuration and management of name servers on the network can affect Web server performance. "Once, a mis-configured [Domain Name System] server at [HP's] external site caused a problem, but a user's perception is that the browser broke," Schneider says.

An intranet user doesn't need to know the physical source of data, which may come from HP's extranet or even the corporate World Wide Web site, so Internet site management issues affect intranet performance and should be monitored, Schneider adds.

An intranet's strength often is the

quantity of publicly accessible, user-provided material on it. Software vendor Autodesk, Inc., in San Rafael, Calif., splits intranet maintenance between a content manager and a technical manager, both of whom further delegate duties.

The content manager, for instance,

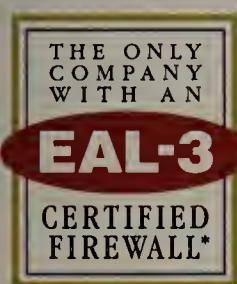


Brett Monello, intranet builder, Silicon Graphics, Inc.

manages 255 mini-Webmasters, each of whom is in charge of a departmental site. The IS department manages this distributed model, but does not provide guidelines for what a page needs to look like.

Large graphical documents are common at Autodesk, which runs its net-

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work on a series of Sun UltraSPARC servers. The infrastructure is solid: The headquarters campus is strung with fiber and copper, using 10Base-T and 100Base-T. Remote offices link to a WAN with speeds of at least 128K bit/sec.

When the internal Web got unwieldy, the IT department installed a series of mirror servers. Soon it had 16, and

Autodesk revamped its intranet, installing proxy servers to cache data and boost access speed, says Steven Litras, intranet technologies architect.

Network managers installed Netscape Communications Corp.'s family of servers, including the Collabra groupware server and Netscape Directory Server to manage the corporate Web. They use Verity, Inc.'s

Search97 as the intranet search engine and for basic spider services, but many of the staff's intranet management tools are home-grown.

The IT staff tracks usage and adds Web servers and proxies as necessary. The staff also is evaluating management software programs to find one that will allow intranet managers to automatically redistrib-

ute data across servers to achieve better load-balancing.

## Reflections from the big guys

Digital Equipment Corp. has a million documents on its four-year-old intranet. Digital uses its own equipment, especially the Alta Vista search engine, for Web maintenance. All 55,000 Digital employees have access to the intranet, which runs on 1,400 servers — up from only 400 just a year ago. Alta Vista crawls and indexes weekly, and Digital archives content daily.

"This lets us do planned growth analysis," says Kathleen Warner, director of the Internet/Intranet Deployment Office.

Digital's various business units manage their own servers and content and keep links current. Warner says probably 60% of Digital's intranet pages are dynamic, among them transaction processing applications, multimedia and Java applets.

Similar to the tactic GEIS takes in managing its massive intranet, Digital's IT group searches for broken links, does quality assurance and sends e-mail to a business unit's Webmaster when it finds problems. Business units can buy internal services from IS to guarantee around-the-clock support, but they have to manage their own content.

Other intranet pioneers whose Webs grew quickly are also technology companies that drew from their employees' expertise. The first Web servers went up on Microsoft Corp.'s WAN in 1995, and usage exploded later that year with the release of Internet Explorer. Netscape, naturally, has had an intranet since its 1994 launch.

"I'm not sure anybody knows what our page count is because anyone can run a Web server," says Gregory Sands, a Netscape senior product manager.

Netscape's IT department rides herd over the Webmaster-filled company by maintaining central directory services and running a master list manager to help monitor usage and bandwidth needs. Similarly, Microsoft's intranet has many facets, from the administrative MSWeb to individual workgroup Web sites. The company already had a strong physical network and e-mail culture.

"At first, everyone turned their desktop machines into Web servers," says Fran Kottwitz, a program manager for Microsoft's IT Group, which has its own ITGWeb. "It has calmed down."

IT encourages Microsoft's lay Webmasters to place pages on central servers, where backup is easier and there is often more space. Also, central Web management will enable IT to distribute software updates via Web technology and to optimize search functions.

Not surprisingly, those Webmasters use a lot of home-grown administrative tools that may result in commercial products — and, someday, may be something strong enough to easily manage a million. ☺

## MANAGING A MILLION-PAGE INTRANET

Many intranet management tasks are the same as general network administration: tracking traffic and balancing the load, making backups, and guarding against security breaches and viruses. For Web-specific issues, intranet managers first relied on home-grown tools, but the selection of commercial offerings is growing.

For example, Aziza, a division of object database vendor Objectivity, Inc., in Mountain View, Calif., specifically designed its Aziza Web tool suite to handle large sites. To do so, it built in functions such as replication, which distributes the usage load across several servers.

Aziza offers a console of four views: hierarchical, physical, a project view for authors, and a user's view that shows a person's Web whereabouts and lists who is accessing the site. It links to any Web server and uses the search engine from Verity, Inc., says Betty Watkins, director of marketing communications at Aziza.

Aziza also can create virtual servers as needed, and all replicated servers are peers for more efficient operations. A manager can replicate a database across several servers. If part of the system goes down, Aziza will shift the load and synchronize the data later.

Matthew Lonergan, Webmaster for the Stanford University Business School, in Stanford, Calif., is evaluating Aziza as a solution to version control problems created by having too many content editors.

"The guy who stores the document last wins when we have editing conflicts," Lonergan says. "Aziza converts the whole mess to a database and gives us real control, like we would have with a database — record-locking, version control and a clean interface."

Lonergan has tested a variety of tools, but none has the industrial strength he needs for the 1,100-user mixed Unix and Windows NT environment at Stanford.

Ipswitch, Inc.'s What'sUp Gold provides what Autodesk, Inc., in San Rafael, Calif., needs to monitor traffic on its massive intranet, says Steven Litras, intranet technologies architect. Litras says he likes the tool because it supports a variety of protocols.

What'sUp Gold 3.5, shipping this month, adds support for IPX, displays network use statistics through a browser and provides network maps.

High-end solutions like Hewlett-Packard Co.'s OpenView would no doubt do the job but offer more management detail than he needs, even on Autodesk's large intranet, Litras says.

The Canadian National Foreign Affairs and International Trade Office manages 6G bytes of mate-

rial on its intranet with the help of the Basis document management suite from Information Dimensions, Inc., of Dublin, Ohio.

"The biggest challenge has been the actual information management — how we keep track of information, what kind of management rules we impose," says Diane Crouse, deputy director of information sources at the Ottawa offices. "As with a lot of Web projects, it started small and grew, and once we'd gone too far to go back, we had to make sure it was well-oiled."

Basis provides a central console of document management functions, stores files in its database and can Web-enable documents for browser access. The Canadian government offices installed a Basis database nearly three years ago and implemented the Web layer when the intranet went in about a year ago.

The database contains documents that range from consulate instructions and economic summit texts to the more typical human resources manuals and employee policies. The database also stores e-mail messages, many of which have large document attachments, says Crouse, estimating that some 9,000 users at Canadian government offices around the world rely on the information.

"Searching the database is now easier, faster and more productive, and the results are easier to download," Crouse says. Incredibly, many of its functions replaced hand indexing of paper documents.

Mercury Interactive, Inc.'s Astra SiteManager helps Webmaster Mark Vivanco track the ever-growing volume of documents and reports generated by users at TriTech Services, a Scataway, N.J.-based division of Merrill Lynch & Co., Inc. Vivanco uses the Web mapping and management functions primarily to identify and clean out duplicate and superfluous files.

"We generate so many dynamic reports on a busy market day, we've been known to run out of disk space if we try to archive them all for too long," Vivanco says. "With Astra, I can scan the whole site, identify objects, even identify Java applets, and check all the links," he says.

Vivanco also took advantage of Astra's open API to develop custom plug-ins for TriTech applications.

Mercury Interactive also is taking a cue from browser manufacturers. Astra accepts plug-ins, notably a log analysis and reporting tool called NetIntellect, from WebManage Technologies, Inc., in White Plains, N.Y. For intranet managers, NetIntellect 2.1 gathers information such as the number of visitors, peak usage times and most frequently viewed pages and files.

— Peggy Watt





to get a subscription to your channel because you are on top of these topics better than I am, and I think

"I can see a time when I find somebody similar to me who is way more active on the Internet than I am. And I'll say, 'I'd like

it will give me a better set of information.' The information would be much more targeted—that's what push is all about."

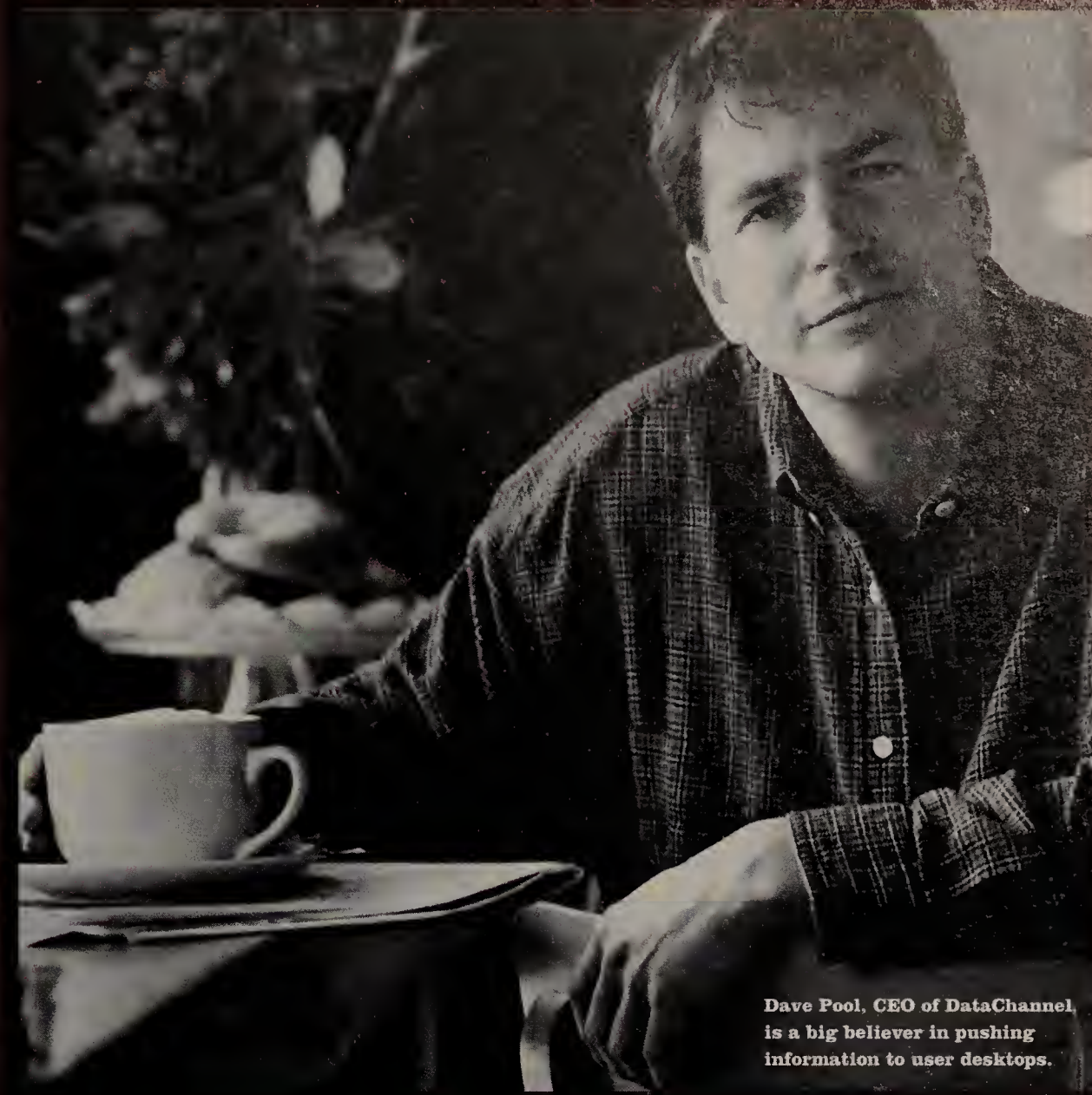
## INTRAVIEW

# A pushy fellow

As CEO of DataChannel, Inc., Dave Pool has a certain affinity for "push" technology. It's only natural, since DataChannel, of Bellevue, Wash., creates tools for information presentation and management over intranets. He says the company's mission is to deliver "the right information to the right person at the right time." Technologies such as push and Extensible



Markup Language (XML) are ways to achieve that goal, he says. Pool shares his perspectives on why every intranet needs a little push and how companies can better pull together useful information in this interview with Mark Gibbs, IntraNet editorial advisor.



Dave Pool, CEO of DataChannel, is a big believer in pushing information to user desktops.

### What is push technology's place in intranets and what impact will it have?

Push in the intranet should be focused on getting the right information to the right person at the right time. The system that is going to be the best push system or pull system, or whatever you want to call it, is the one that can best track who gets what information.

Say I get a piece of information that's important to hand over to the engineering group because it has to do with Java. Well, there's no software that I could put on my system that would just say, 'OK, send it where it needs to go' if it has to do with this specific thing or, if this person said something, the message gets sent to this person. It would just take too much. So

routing content within a corporation will be the center of what push technology is based on. And the routing tables will be made by people, not machines.

### Your definition of push sounds as if the focus is on supplying context.

Absolutely. And it also encompasses the personalization of that context. But an end user won't own all of the channels on his or her desktop. The CEO may own a couple. A department manager may own some. A group that the user is involved with may own a couple of channels. And the end user may actually own a couple. So

it's about the shared administration of that desktop or those desktop channels.

Who gets what information will be based on a set of profiles. In those profiles will be who gets to subscribe and who gets to publish. It ends up being a distributed administration system for channels to the desktop.

Let me give you an example. Within a corporation, telesales reps have little role in what they get to put on their desktops—the decision is centrally managed because they have a specific job function. On the other hand, people involved in executive management want to be able to administer their own desktops without intervention from the IS group. They just want to make sure their desktops are personalized.

So you can see that, depending on your role, you might have centralized or decentralized administration. Within the latter, you may have multiple owners of a channel on your desktop.

### A lot of users seem to think that push technologies are just going to increase the amount of information they get, not necessarily improve its quality. How do you counter that perception?

Let me give you an example of that as well. [Netscape Communications Corp.'s] Netcaster channels are active desktop channels. Is that good or bad? The fact that I have seven versions of PointCast, [Inc.] channels, some of which come from Disney, some of which come from Warner Bros., some of which come from PointCast itself, is that good or bad?

Well, if you don't manage the channels, you'll



# INTERVIEW Q&A

certainly get information overload. Managed, segmented and targeted based on your objectives in the company, push can be effective. Now on the intranet, you've got oodles of information. A centralized system that manages these channels is the answer to overload.

## So do you see channel management as part of a knowledge officer's province?

We believe there will be topic specialists. For example, if you're the product manager at a company, you're probably the best person to manage the competitor channel. Correct? You've been sending e-mail out. You're not technical enough to

make your own Web page. And the information changes so often that you really can't spend the cycles to edit HTML. So what you'll do is take URLs and publish them to channels based on a hierarchical list. You become a content manager, or a topical content manager — a Webmaster of the year 2000.

## But won't they come at different levels — for example, content managers who just publish URLs, content managers who publish URLs with commentary and content managers who add some higher level of editorial content?

There absolutely are going to be different levels. Just the fact that it's organized gives a certain level of value add, and if you're going to editorialize it, that will be another level. What you're going to start finding is we don't need any more content on the Internet or on intranets. We just need it organized in a way based on users' roles.

You're going to see the Dewey decimal system for the intranet and Internet. You'll see a metadata system that allows people to organize information on a per-user basis. We call that content and presentation management.

## So companies need to define information architectures at topical levels?

Absolutely. But when I walk into a chief information officer's office today and ask: 'Is information a strategic competitive weapon for your business?' he'll say, 'Yes.' Then when I ask, 'Do you have a list of the weapons?' the CIO slows down a bit. When I ask, 'Have you listed or assigned those

nel, XML or metadata information will be the most popular protocol on the Internet. The reason I say this is because the first thing I do when I come to a Web site is grab the hierarchical list of information about that site. Or when I do a search, I do a search and get a hierarchical list back.

And I will choose the display. It will come back and be displayed in a PointCast-like software guide. It's a software guide that efficiently shows lists



weapons by employee, arming your team with weapons?' the answer is, 'No.'

So is it a strategic weapon? Well, it may be one in concept, but it certainly isn't in implementation. There's an opportunity for managing information on a per-user basis.

## Look into the crystal ball and tell us what channels will look like in, say, two years.

My crystal ball tells me that the chan-

nel, XML or metadata information will be the most popular protocol on the Internet. The reason I say this is because the first thing I do when I come to a Web site is grab the hierarchical list of information about that site. Or when I do a search, I do a search and get a hierarchical list back.

I will be able to register for components of a Web site or pages within a Web site for my personal data channel. So my desktop, which is this hierarchical list of channels, will be listening for changes. And those changes will be metadata descriptions that will be sent down. I'll define the organization. ☺

## CGI, continued from page 20

Ochs swears by the Cold Fusion tool, which basically extends the commonly understood HTML syntax with server-side tags. Through dynamic page templates, Cold Fusion combines HTML and its own Cold Fusion Markup Language. With the approach, Cold Fusion's server-side interpreter pre-processes the template. The resulting HTML page is sent to the browser.

## Lessons learned

Ochs has a few tips for those interested in sending pager messages from an HTML page. "Security is the main thing," Ochs says. If he had not built the proper precautions into the application, users would have been able to page Fruit of the Loom managers anonymously. The last thing intranet developers wanted was someone being able to send an offensive — and untraceable — message to an executive.

Another potential problem was the identification of pager numbers, which could be copied down and abused. One trick is requiring authorization for sending pages, Ochs says. Another is hiding numbers from the users.

Fruit of the Loom has some other uses for the CGI. One is with a product locator application. The company's nationwide inventory changes constantly. Nonetheless, Fruit of the Loom customers want the latest information about product availability. They can get it with the product locator; for example, keying in the style number in a

Web form brings up an inventory update on how many packages of men's briefs are in East Lansing, Mich., and where customers can buy them.

The inside view is more complex. The system gets daily updates from suppliers via a forms interface and then tracks the inventory of each style. This information must be sorted by ZIP code, so users can do location queries.

A CGI program plays the role of filling the forms with data. In fact, providing the ability to query a database

The company decided that the intranet provided the best vehicle for distributing news articles, which it gets in bulk, to specific employees. Programmers wrote an application in Perl that parses these articles and partially prepares the HTML pages that contain them. Based on the date or another variable, a CGI application, also written in Perl, dynamically builds the rest of the page with the most current information.

The articles are indexed and can be searched using the Wide Area

Information Service, says John Swartzendruber, senior information consultant of advanced technologies. So far, the company is pleased, he says.

## A few fine ideas

Consulting firm fine.com, in Seattle, put the CGI to work building a client intranet revolving around databases for the employee directory, listings of local hotel and restaurants, and "What's New" items.

To allow browser-enabled users to access these various corporate databases, fine.com programmers built CGI scripts using an SQL database connectivity product called WebDBC 2.5, from StormCloud Development Corp. WebDBC can be implemented as a CGI executable, a Dynamic Link Library for ISAPI, which is a CGI alternative for Microsoft's Internet Information Server, or an NT service, says Kirsten Stuber, database developer.

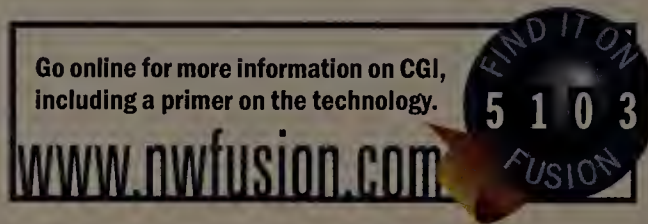
"The Web page calls WebDBC and passes it the database query, the name of a template and other parameters. The data is returned from the database and formatted by the template as specified. Cookies are set and retrieved from the template too. HTTP variables can also be retrieved. The resulting page is returned to the client," Stuber explains.

The company has another angle on WebDBC use, as well. "One thing that we don't see a lot of on the Web is the ability for users to view and update data they've already submitted to the back-end database. This type of functionality is moving the Web closer to a client/server-type application, and is a critical piece of an intranet site," Stuber says.

On the intranet, fine.com accomplished this by using an SQL SELECT statement that queries for the desired information, such as the employee's personal profile. WebDBC displays this information as the default data in HTML form fields, Stuber says.

The form then is sent back to the user in a nicely formatted display, she adds. Users can change the data in the form fields and resubmit the data, via a behind-the-scenes SQL UPDATE statement, to the database.

The intranet approach not only lets employees share information, but also saves money, Stuber says. "The same custom-built functionality, if done as a client/server application, would have cost the customer much more than it did and probably wouldn't be as scaleable as it is." ☺



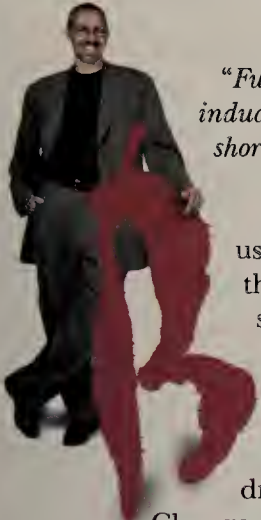
via an HTML form is one of the most common, and critical, uses of CGI programs.

US WEST Communications Group, in Denver, also relies on CGI programs in one of its customer service applications. Using a scripting tool and a lot of C programming, US WEST built a CGI program for pulling records of customer interactions from various databases, says Sherman Woo, director of global communications. When a user keys in a customer name and number, the application looks in different environments, finds the records and quickly organizes them in chronological order.

CGI was just what the doctor ordered for Eli Lilly and Co., in Indianapolis.



# Reducing stress and keeping your staff



*"Future shock . . . the shattering stress and disorientation that we induce in individuals by subjecting them to too much change in too short a time."*

— Alvin Toffler, *Future Shock*

businesses today are more dynamic and market driven than they have ever been. But what people want is a stable work environment — they don't like change.

Too much change stresses people out and makes them unhappy. Except, of course, those who thrive on chaos and shuffle off this mortal coil when they're 35 because they drank too many caffeine-laden soft drinks and ate too much pizza.

Change, the cause of Toffler's future shock, is tough to deal with because it demands effort and thought. Effort is needed because you have to work at spotting changes and keep watch for those that are significant. Thought is required because to deal with change, you need to integrate its consequences into your world picture so your future actions are appropriate.

In short, change means hard work.

Intranets are potentially a source of even more stress as the free flow of data and information can make change more visible to employees. Bring in push channels from outside and inside sources, get people linked to mailing lists, let your intranet grow through user-driven publishing and, in next to no time, the average person is drowning in a sea of change.

What will that lead to? You guessed it: an unhappy staff (you are so good!).

Now, apart from stress and unhappiness, future shock also leads to disorientation which, in turn, threatens efficiency and effectiveness. With too much input, people lose the big picture, get confused about cause and effect and neglect the details. This is the kind of environment that makes it hard to keep a staff, let alone build an effective one.

So, what can we do about this? As you may have guessed (confirming that you really are amazingly good), I have a couple of thoughts.

First, you need to manage the flow of information on your intranet. If users want to access newsgroups, push channels or mailing lists, make sure you know what they are receiving and why. If you can't come up with concrete reasons for allowing the information in, or if you can't determine the source's value to the organization, it's a no-brainer to ban that source.

Next, you need to filter the sources. Some data sources might contain useful information, but the signal-to-noise ratios may be too low or too high for practical purposes. In these cases, the

solution is to find someone to act as a filter. That person takes the data feed and extracts information suitable for the organization's consumption.

Rather than letting everyone view each press release and access every newsgroup relevant to your industry, give one person the responsibility of monitoring the information sources and sending out summaries via e-mail or on an intranet page. To do the latter, you could use an internal push channel.

A similar strategy applies to monitoring competitors' Web sites. There is little value in a dozen people from the marketing department each watching all of the sites. Get one or two people to monitor the sites and have them be responsible for notifying all the other group members of significant changes, preferably with an accompanying commentary.

You need to create an intelligence-gathering organization like the CIA or the KGB. Field operatives (agents) gather data and feed it to analysts.

The analysts filter the data and integrate what is relevant with what is already known. They then summarize the changes and consequences for those who need to know.

Another part of the solution involves automation. While people can filter the entire flood of data, anything that can be done to automate the process will improve accuracy and productivity.

Of course, you might feel there's an unacceptable risk of something significant slipping through an automated net. A more pragmatic view is that it is often more productive to tolerate that chance than to try to have humans handle everything (they will always be error prone anyway).

There may be other things that you can do in your business to manage information, but the basic rules are: Know what data is coming in and control where it

goes and what information is extracted from it.

The fact is, when you look at how the business world is changing, you can see that things aren't going to get easier. Competitive pressure can only increase and letting your staff drown in data is just not workable.

Future shock is a real risk, and information overload is the consequence. Your challenge as intranet managers and analysts will be to figure out what information is needed, by whom and when. Getting it right will minimize the stress on your staff, and make employees happier.

Get it wrong and you may end up without a staff. That's a future shock you really want to avoid.

*How shocking will your future be? Contact me via the Internet at [imcolumn@gibbs.com](mailto:imcolumn@gibbs.com) or by phone at (800) 622-1108, Ext. 7504.*



JOEL NAKAMURA



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# Intranet Applications

**Covering:** Messaging • Groupware • Databases  
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## Briefs

■ **Start-up KnowledgeLink Interactive, Inc.** last week launched *PerSavant*, a server-side application designed to access information from a number of electronic sources and present it to users in **HTML format**. *PerSavant* is scheduled for commercial availability in April, at \$15,000 for a 50-seat license.

© KnowledgeLink: (301) 405-8957

■ **Funk Software, Inc.** today shipped a new version of *WanderLink*, the firm's NetWare-based remote-access software that now includes an **Internet Gateway** to let businesses connect to the 'Net from a port on the *WanderLink* server. *WanderLink* version 3.0 starts at \$495.

© Funk: (617) 497-6339

■ **IBM** last week announced it is establishing an "Institute for Advanced Commerce." The institute has \$10 million in initial funding and will cooperate with universities such as Carnegie Mellon. Institute board member Irving Wladawsky-Berger, IBM's Internet division general manager, said the research projects will help IBM customers plan for electronic commerce.

■ **Parable, LLC** this week will release *ThingMaker 1.0*, a utility for creating interactive multimedia objects for Web sites. *ThingMaker* does not require the user to know Java or other languages; all objects are constructed using predefined tool palettes and drag and drop. The resulting objects, called *Things*, require a *ThingViewer* plug-in on Microsoft Corp. and Netscape Communications Corp. browser clients. The objects provide actions, such as animation, sound and multiple page links, when the mouse moves over or clicks on them. A demo for Windows 95 and NT is available at [www.parablecorp.com](http://www.parablecorp.com); the full version costs \$99.

© Parable: (617) 796-0860

## Web ratings debated at Internet Online Summit

By Ellen Messmer  
Washington, D.C.

A growing number of politicians and pro-family activists want every Web site and chat group to be rated for smut, language, and violence. Based on the ratings, blocking technologies in browsers and servers can filter out unwanted content.

At first glance, the filtering idea looks like a great way to "childproof" the Internet, as Vice President Al Gore called it during his recent appearance at the Internet Online Summit here.

The key filtering standard is the Platform for Internet Content Selection (PICS), devel-

oped at the World Wide Web Consortium (W3C) about two years ago. PICS is an open technical specification that lets browsers or other client applications recognize "tags" attached to Web pages. The tags indicate the presence of any type of assigned ratings system that conforms to PICS.

At the Internet Online Summit, which was sponsored by America Online, Inc., Microsoft Corp. and other vendors, PICS was hailed as the core technology for filtering out the good, the bad and the ugly. "PICS is already deployed; it's part of the fabric of the Internet," said Jerry Berman, director of the Center for Democracy and Technology.

The two leading ratings systems, the Recreational Software Advisory Council on the Internet (RSACi) and SafeSurf, are based on PICS.

RSACi and SafeSurf ask Web site operators to evaluate their own content for sex or violence. The ratings bureaus then issue a PICS-based tag that the Web site operator can put on a home page or each individual page.

Third-party ratings also can be done using PICS, and PICS client software can be set to recognize the independent ratings, automatically making a remote check of a rater's master list every time the browser goes to a Website.

The idea is that client software that supports PICS, such as the Microsoft Internet Explorer 4.0 browser, can block access to specific sites or only go to designated sites, depending on how the software is set.

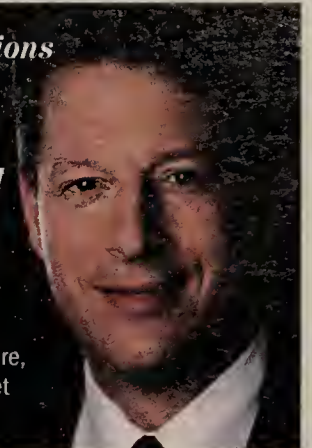
Microsoft is a key investor in RSACi, and Internet Explorer 4.0 ships with RSACi as a default. RSACi is pushing Netscape Communications Corp. to support its ratings system, but so far, Netscape has not announced a decision.

A new version of PICS, called "PICS Rules," released last week is aimed at making PICS browsers more flexible, said Paul

Resnick, chair of the PICS Internet group at the W3C and an associate professor at the University of Michigan.

*"Congratulations to the tens of thousands of Web sites that have voluntarily rated themselves."*

Vice President Al Gore, at the recent Internet Online Summit



"Whether it was ratings from the Boy Scouts or your church group or a self-rated site, PICS-Rules would let the browser easily combine the preference for several ratings systems," Resnick said.

However, Microsoft said it is in no hurry to implement PICS-Rules in its browser, said Laura Jennings, president of the Microsoft Network.

PICS has been widely misunderstood by the very groups championing it, Resnick said.

Get more online:  
• Copies of PICS rules and related specs  
• An interactive PICS demo that questions the standard's validity

5116  
www.nwfusion.com

The PICS standard says Web site operators should be able to attach just one PICS tag to a Web site home page to block access to the entire site.

To do this, the PICS standard requires the Web server to recognize the PICS tag and translate it in an HTTP link to the browser. But the reality is that no Web server, with the exception of one from IBM, supports this feature.

So unless every Web page at a site is tagged with a PICS label, there can be no guarantee that it can keep anyone out — or let anyone into a site — using a PICS browser. ■

## Internet Image checks push status

*Company blends push and pull for deployment flexibility.*

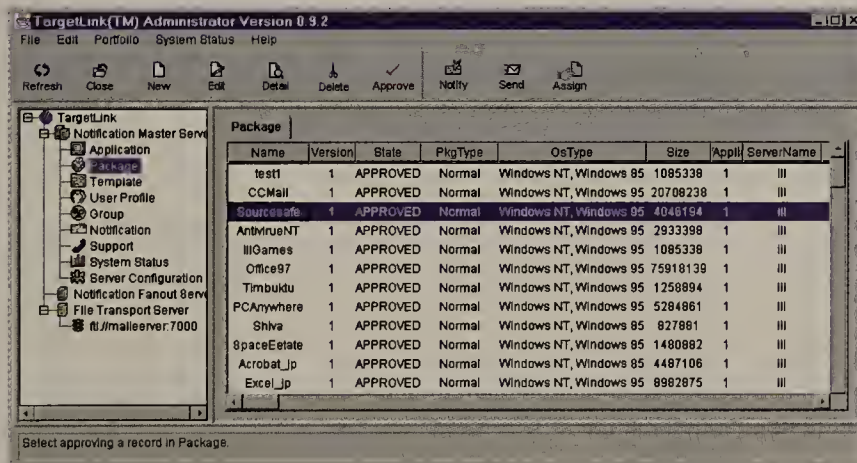
By Andy Eddy  
Fremont, Calif.

Unlike many of its competitors, Internet Image, Inc. intends to give push technology a shove in the opposite direction, back toward system administrators.

The company has developed

With the product, clients can receive individual applications or groups of programs.

TargetLink lets administrators set up templates, which are collections of software packages that take into account the specific requirements of the client being supplied. For instance, a



*TargetLink, using BeyondPush technology, gives system administrators the ability to set up packages of applications to deploy to clients over the network.*

BeyondPush technology that lets administrators push applications and information to clients over intranets and extranets. It then can poll the end-user devices to verify what has been received. It is what Internet Image terms a blending of push and pull.

The technology relies on Sun Microsystems, Inc.'s Remote Method Invocation to provide two-way, Java-to-Java communication, which sets BeyondPush apart from the "broadcast-only" model that other push-technology applications employ, the company claimed.

The first product to use BeyondPush technology will be Internet Image's TargetLink.

company's finance department might require spreadsheet and word processing software, while the marketing department might need presentation, word processing and art software.

One user likes what he sees so far. "It lets us concentrate on managing the network instead of wasting our time doing a lot of tedious installs," said A.J. Farmer, system administrator for Spectrum Sciences, Inc., a network services company in California, Md.

TargetLink is expected to be available by the end of February at \$55 per seat, and will run on Windows NT and Solaris servers.

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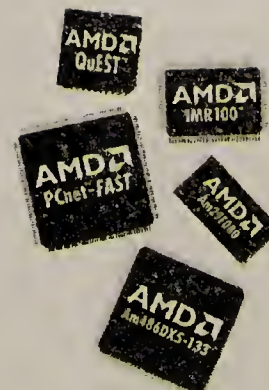




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## NET INSIDER

## Like regulating acid rain

One of the best things about working for a place like Harvard is the constant flow of interesting events that occurs here.

The most recent of the interesting events was this year's edition of the Harvard Information Infrastructure Project (HIIP). (For details about

HIIP, go to [www.ksg.harvard.edu/iip/index.html](http://www.ksg.harvard.edu/iip/index.html).)

HIIP was a two-day conference on the impact of the Internet on communications policy. The

papers from the conference will be posted at [ksgwww.harvard.edu/iip/iicompol/first.html](http://ksgwww.harvard.edu/iip/iicompol/first.html).

The conference attracted people from all over the world, and some of them had a clue about the Internet and how it relates to traditional, country-based telecommunica-

tions regulations.

One can categorize the attendees at this conference into three bunches: regulators, who seem to be genetically predisposed to fix things by adding regulations; academicians and policy researchers, whose understanding of how the Internet actually works is often somewhat challenged; and a motley collection of others ranging from reporters to libertarians.

As in past HIIP conferences, the overall feeling is that the conference is targeted to those in governments who are trying to understand just what this Internet thing is anyway.

Because of this, some of the papers presented can be a bit low in technology and high in fuzzy government policy-speak. Most, however, are generally quite interesting explorations of problems, ranging from the impacts of the changing Internet peering policies to the distribution of Internet service provider access in the USA. The best title of a paper

was "Ducks, Grandma, and Sausage: What Happens when the Telephone Network Gets Sucked into the Digital Tornado."

The best analogy that came out of the conference is from John Mathiason of New York University, who compared the difficulty of creating regulations for the Internet to what was going on in Japan at the same time as the conference. Representatives from 150 countries were gathered in Kyoto to try and figure out how to deal with global warming.

The Internet and the world's climate have quite a bit in common, at least in the area of the effectiveness of regulatory actions. No individual country is able to introduce and enforce rules to control acid rain, just as no individual country is able to regulate the Internet.

Regulations for global phenomena must be developed through frequently tedious multinational negotiations. This type of negotiation rarely

produces detailed regulations, since it is far too hard to get everyone to agree on the details. About all that can happen is general agreement on the basic rules of the road.

Some Internet libertarians would argue that the Internet requires no regulations. That argument is irrelevant; there will be regulations, needed or not, because the Internet is just too important to the economic future of the world.

I expect to see regulations about minimum reliability of Internet backbones and peering arrangements popping up in the next year or so.

The Internet is not going to be immune from regulations. It is very much a victim of its own success. Go to

[carin.bellcore.com:8000/~swrs/ippoll/daily.html](http://carin.bellcore.com:8000/~swrs/ippoll/daily.html) to see how successful it is.

Disclaimer: Harvard produces fog better than acid rain, but in any case the above is my own forecast.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at [sob@harvard.edu](mailto:sob@harvard.edu).

*The Internet and the world's climate have quite a bit in common, at least in the area of the effectiveness of regulatory actions.*



Scott Bradner



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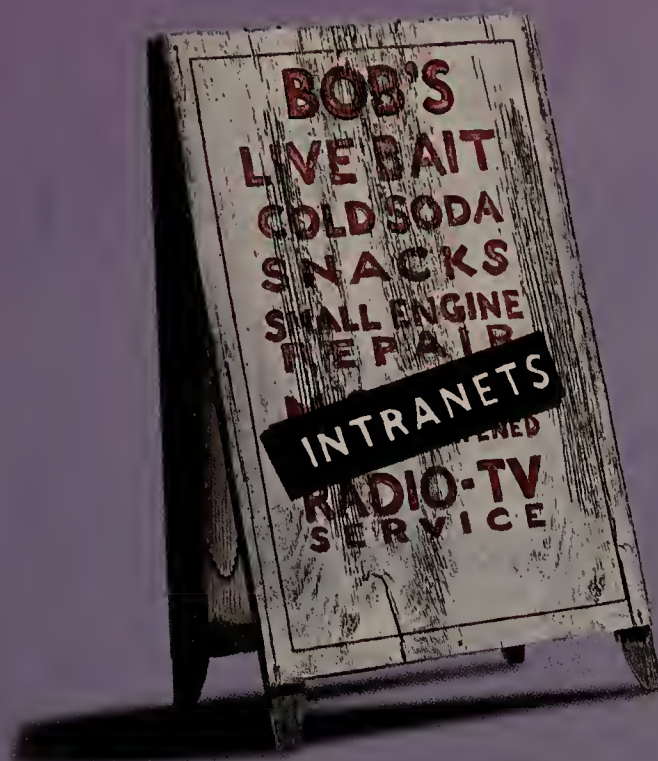
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*Year 2000 problem*

# Most e-mail stamped OK for Y2K

**W**hatever IT calamities *do* unfold when the year 2000 tolls, chances are network managers still will be able to commiserate with one another via e-mail.

Only the oldest and most poorly designed electronic messaging products are likely to experience Year 2000 date problems, according to most industry experts. Moreover, any glitches that occur are likely to be of the annoying variety, such as mislabeled headers, missorted in-boxes or, perhaps, a premature license expiration notice, they say.

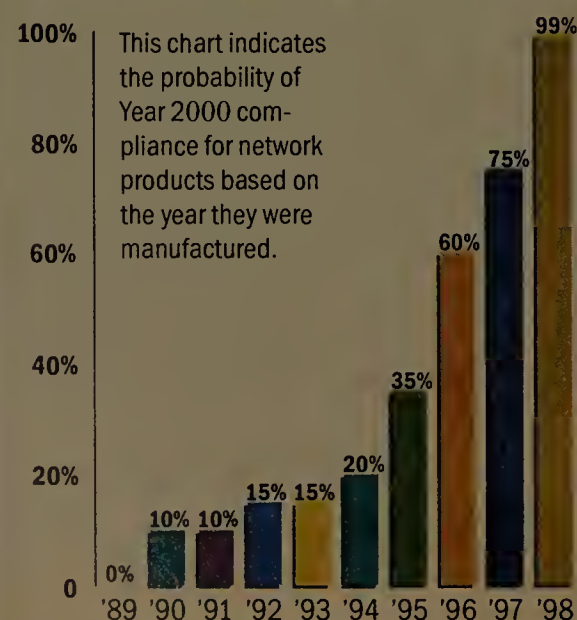
Only a minority of Year 2000 experts predict anything worse than routine message losses, and they point the finger of blame more at network gear and operating systems than at the applications themselves.

But that doesn't mean administrators and vendors are sitting on their hands through the ongoing Year 2000 fire drill. There is plenty of old and susceptible stuff out there, including freeware. And even users of newer products from major messaging companies are demanding compliance assurances and test data.

Bottom line: Even the most confident messaging managers and vendors recognize the need to cover all their bases — as well as their behinds — in the event that Year 2000 doom-and-gloomers prove prescient.

**As for Internet mail**

"The [Internet Engineering Task Force] has a working group together that is looking through all of the [Internet mail] protocols and finding where there are issues," says Paul Hoffman, director of the Internet Mail Consortium (IMC). "We have essentially found none that are important."

**THE OLDER THE GEAR, THE MORE TO FEAR**

SOURCE: BELL ATLANTIC NETWORK INTEGRATION, FRAZIER, PA.

*By Paul McNamara*

Important may be in the eye of the beholder, however. "There will be problems with anything that deals with X.400 and X.500, but people have been aware of that for awhile," Hoffman notes.

The specter of Year 2000 chaos, whether real or exaggerated, has spawned an industry to fulfill the need for full compliance testing. While the main-frame world has drawn most of the new industry's attention, it is by no means ignoring networks.

"The real message we're trying to put out is that you need to do your due diligence on this," says Michael Theoharous, director of consulting services for Bell Atlantic Network Integration, in Frazier, Pa. "You can't ignore it, because one piece of equipment in the middle of things could screw up your whole network."

According to Theoharous, many organizations that are reliant on older networks — hospitals and schools, for example — have yet to begin their compliance testing.

Meanwhile, messaging heavyweights Microsoft Corp., Lotus Development Corp., Novell, Inc. and Netscape Communications Corp. have posted reams of information about Year 2000 on their Web sites. In essence, these companies are offering rosy assessments of how they expect their products to perform.

Lotus, for example, contends its products are completely Year 2000-compliant, including its flagship groupware package, Lotus Notes. Shops that still are running older versions of the company's cc:Mail, however, have more to be concerned about, the company acknowledges.

"We are scrambling to migrate the mail systems at our main sites to [Microsoft's] Exchange by the end of 1998, [affecting] approximately 15,000 users," says Brian Holle, e-mail administrator at Roche Bioscience, in Palo Alto, Calif. "The problem is that some of our remote sites are running cc:Mail [DB6], which has the [Year 2000] bug."

"These sites are spread all over the world," he adds. "I'm sure it's going to be frantic around here at the end of 1999."

**Vendors express confidence**

Microsoft also maintains that its messaging products are Year 2000-compliant, with the only possible problem arising for those who bought Exchange 4.0 shortly after its debut and have not upgraded since. A patch is available.

Novell is conducting extensive tests of GroupWise Versions 4.1 and newer versions. Company officials say they are convinced GroupWise is Year 2000-compliant, but their own certainty isn't enough for some of their customers.

"We're seeing our customers and the customers

of other companies who say, 'Sorry, we just can't take your word for it; give us some assurance,' " says Steve Carter, an engineer for Novell's GroupWare Division. Novell expects to have its testing done by March.

**Coordination a key**

Getting the Year 2000 house in order is only a part of the equation, experts say. Jerry Johnson, senior policy analyst for the state of Texas, envisions major problems coordinating Year 2000 compliance efforts between trading partners who are conducting electronic data interchange transactions.

*"I bet we are going to find some Year 2000 problems, simply because people are using old software and will continue to use old software in the year 2000."*

Paul Hoffman, director, Internet Mail Consortium

"Your timing will be critical, depending on the number of trading partners you're dealing with," Johnson says. "You all have to agree that as of such-and-such a time, you're going to change over from a two-digit to a four-digit year [in EDI applications]."

But Johnson agrees that e-mail difficulties should be minor. "There might be a problem in some of the trace and forwarding capabilities within a couple of days on either side of Jan. 1, 2000," he says.

Another corporate user shares Johnson's concern about Year 2000 problems being spread among networks.

"I think there definitely will be a ripple effect, especially with foreign countries," says Kevin Coleman, collaborative computing specialist at Joseph E. Seagram & Sons, Inc., of New York. "I think most U.S. companies will have most of their critical systems compliant, [but] I wonder about all governments, including the U.S., and foreign companies."

"I guess we won't really know until the day hits. I don't think it's going to be a doomsday, but things will be rattled," Coleman says.

IMC next year plans to hold an event where vendors and users will be given an opportunity to demonstrate how their e-mail products will interoperate come the big day.

"Our event most likely will have a wonderful result that won't be completely accurate in the real world because it will only be for shipping [software]," Hoffman says. "We aren't going to pull out every piece of old software we can find and test it." ■



# Technology Update

Covering: Evolving Technologies and Standards

## IP nets: Quality of service is not a pipe dream

By Hank Zannini

If the Internet and other large-scale IP-based networks are to move forward, guaranteed quality-of-service (QoS) support needs to become a reality.

There are several emerging QoS standards that may make that dream a reality — most notably class-based queuing and the Resource Reservation Protocol, which can control some QoS features at the edge of an IP-based network.

However, until QoS can be guaranteed end-to-end throughout the switched/routed infrastructure, these QoS schemes cannot address the greater problem.

Without sophisticated QoS capabilities, carriers will not be able to offer end-user customers value-added services, such as high-priority transmission for business-critical applications and managed LAN/legacy services.

The network must provide levels of service that adequately correspond to different classes of traffic, including IP-based data, legacy data, voice and video.

The network must be able to identify different service classifications and handle each of those efficiently, without large amounts of network overhead.

### QoS a pipe dream?

Although it may have seemed a pipe dream just a short time ago, QoS over IP today can be employed through the use of innovative standards in the core of the network.

Nothing inherent in the TCP/IP protocols precludes or makes implementing QoS ser-

vices any more difficult than those found in ATM. In fact, next-generation IP switch/router vendors are leveraging many of the same QoS algorithms, which work on 53-byte ATM cells, and are adopting them to work with variable length IP packets.

*Nothing inherent in the TCP/IP protocols makes implementing QoS services any more difficult than those found in ATM.*

For example, congestion management plays a large role in the performance of the network infrastructure and in the ability of the network to provide suitable bandwidth to specialty traffic, such as SNA, voice or video in a guaranteed QoS methodology.

Working in conjunction with transport protocols such as TCP, Random Early Discard (RED) detects and avoids network congestion by intelligently identifying temporary bursts of traffic patterns and distinguishing them from bona fide network overload.

Using RED, network man-

agers can implement policies to handle traffic during congested periods, including the ability to reduce bandwidth across the network in proportion to network utilization.

Once the issue of congestion has been addressed, network managers and carriers can employ weighted fair queuing (WFQ) to enable QoS capabilities. WFQ provides high-priority traffic, such as voice or video, with a higher priority service than simple data traffic.

### Sophistication

One way to implement WFQ is to take advantage of the sophisticated functionality of edge devices, such as routers and frame relay access devices. These boxes can present traffic to the core switch/router using IP precedence bits for requesting one of six possible classes of service from the network. They also can use access control lists (ACL) to define traffic policies required for transmission through the network.

Once high-priority traffic has been addressed, the remaining

bandwidth is split among the low-priority requests. The low-priority traffic then receives fair distribution of the surplus bandwidth.

By classifying, filtering and shaping network traffic flow using techniques such as committed access rate (CAR) at the network edges, the core network switch/routers are able to deliver a committed information rate to the end user across the network.

Most router suppliers, including Cisco Systems, Inc., support IP precedence, ACLs and CAR in their edge router products.

The end result of employing these technologies is Internet networks that deliver the same levels of QoS as frame relay, ATM or dedicated leased-line networks.

### Scalability

The one issue in the core of the network that must still be addressed for QoS to be practical across the WAN is the scalability of hardware systems.

As more end users require more bandwidth, the core network must scale appropriately. Gone are the days when carriers or users could afford to add another router or another switch to solve temporary regional bandwidth requirements.

Today's rapid growth and economic concerns are forcing carriers and enterprises to employ technologies and platforms that can grow quickly and elegantly to meet the rapid increases in bandwidth-intensive applications from current and new users.

*Zannini is business development manager for Avici Systems, Inc., a Chelmsford, Mass.-based developer of Terabit Switch/Router technology. Zannini can be reached at hank@avici.com.*

## UP CLOSE

### Clearing up QoS confusion

According to the Internet Engineering Task Force working group on quality of service (QoS), it is easy to get IP- and QoS-based confused with resource reservation. While resource reservation protocols such as RSVP provide a method for requesting and reserving network resources, they do not provide a mechanism for assuring that the network path used has adequate resources to accommodate the requested QoS. Conversely, QoS-based routing increases the chance that adequate resources are available along a path, but it does not reserve the resources.

### QOS IN AN IP ROUTER-BASED ENVIRONMENT SHOULD:

✓ **Automatically accommodate alternate routing paths.**

In the event of congestion and line failures, routers must be able to shift traffic from one path to another as soon as a better path is found without causing spikes in bandwidth or router CPU cycles.

✓ **Optimize resource usage.**

A network state-dependent, QoS-based routing scheme can aid in the efficient utilization of network resources by improving the total network throughput. Such a routing scheme can be the basis for efficient network engineering.

✓ **Handle performance degradation.**

State-dependent routing can compensate for inadequacies in network engineering, providing better throughput and performance than a state-insensitive routing scheme.

### NETWORK HELP DESK

Ron Nutter, a Master Certified Novell Engineer and Groupware CNE in the Lexington, Ky., area, tracks down the answers to your questions. Call (800) 622-1108, Ext. 476, or send your questions to [rnutter@world.std.com](mailto:rnutter@world.std.com).

**I have Novell, Inc.'s IntranetWare 4 Dynamic Host Configuration Protocol (DHCP) assigning a pool of about 300 addresses to Client 32 DOS/Windows and Windows 95 clients. I get two or three calls per day from Windows 95 users who get address assignment conflicts on start-up.**

**This can be resolved in DHCPCFG by deleting the offending IP address from the table and having the user reboot, but it's time consuming. I am familiar with WINIPCFG and have tried a number of combinations but still cannot get it to work. I always have to go back to DHCPCFG and delete a table entry. Is there a fix? Via the Internet**

Download DHCP21N.exe and FTCPXV09.exe from <http://support.novell.com> using File Finder. The first file is an updated DHCP21N.nlm, and the latter is a TCP/IP NetWare Loadable Module. These files fix the communication problem among the DHCP, the TCP/IP protocol stack and the Windows client. Apply IntranetWare Service Pack 4a before installing these files, and make sure you document your DHCP configuration. It's important to do the latter because part of the installation involves deleting the current DHCP configuration before uploading the updated version.

Review the Readme file that comes with the DHCP update. Options are available that could eliminate the need to intervene when workstations are moved between subnets. It also is a good idea to apply the appropriate updates to your Windows 95 workstations. Depending on what version of Windows 95 you have, you may need to apply Service Pack 1, KRNLUPD.exe and MSDUN12.exe patches. If you have Revision B of Windows 95, MSDUN12.exe will be the only one of the three files that you will be able to apply. KRNLUPD.exe fixes a memory problem in pre-Revision B systems, and Service Pack 1 fixes more items than I can list here.





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**COMPAQ**





## Back up your words, Microsoft

**M**icrosoft loves to talk about choice. Everything the Redmond, Wash., firm does is motivated by the honorable goal of expanding customer choice and value — whether it be combining applications into low-priced suites, giving away browsers or integrating the browser into the core operating system.

Take this comment from Tod Nielsen, Microsoft's general manager of developer relations, in a *Wall Street Journal* piece last week about new Sun technology aimed at overcoming incompatibilities in Microsoft's Java offerings: "Having software [Sun's new Activator technology] mysteriously search a user's machine and then replace it with something it views as kosher isn't what Microsoft's about. We believe in customer choice."

This theme of choice and customer benefit rings through the comments of Bill Gates, Executive Vice President Steve Ballmer and Chief Operating Officer Bob Herbold, among others, in defending Microsoft against legal challenges and other criticism.

In fact, on Microsoft's Web site you even can find a fascinating study, conducted for Microsoft by a couple of prestigious polling firms, confirming the importance of choice. According to the study, 62% of respondents believe businesses — not the government — should ensure that consumers have a choice of products. Hmmm. By the way,

the study also found that Microsoft is the most admired company in America.

Microsoft isn't the only company that drapes its profit- and market share-minded tactics in the mantle of customer choice. But the terminology really rings hollow when it comes to Microsoft's Java strategy.

I've talked to lots of network professionals and what they *choose* is a single, consistent implementation of Java across the industry. Customers view Java not as some Holy Grail panacea but as an alternative — one that needs plenty of work — that could help them overcome longstanding problems in integrating diverse machines. Customers certainly *do not choose* to see Java as a political and business football that winds up punctured and useless because of incompatibilities.

Customers *choose* to see Microsoft compete on the quality of its Java support, applications and development tools. They *do not choose* to see Microsoft leverage its market strength to slow Java down.

That's because customers, unlike Microsoft, don't view Java as a threat to Windows. That's a critical distinction. Customers see Java as a way to get more value from their Windows machines, as well as their Unix machines and mainframes and whatever else they have installed.

Microsoft is out of sync with customers here. If Microsoft really wants to provide more value and back up its rhetoric, it will stop the Java infighting. That would be the right choice.

John Gallant, editor in chief

jgallant@nww.com

Career Strategies • Frank Schoff

## Strong job market leads to some strange behavior

**M**ost managers who are responsible for hiring IT professionals can tell you how difficult it is to recruit qualified candidates. Driven by a healthy economy, corporate globalization and a strong emphasis on information-based business systems, the demand for IT talent probably exceeds the supply.

However, finding the right people is only half the problem recruiters and managers face in today's strong job market. During the past year, I've observed more unusual — nay, bizarre — behavior on the part of recruited individuals than in all my previous nine years as a recruiter. Here are three examples:

- Candidate A: Continues to conduct job search after accepting an offer and scheduling a house-hunting trip. In a moment of conscience, tells new employer of these efforts. Offer is withdrawn.

- Candidate B: In an early interview, is asked how soon he could start. Says he is unsure because he is eligible for a \$200,000 severance bonus if he stays with the company until terminated. Dropped from consideration.

- Candidate C: Advised early of the salary range for the position. Says the range is acceptable. Continues through the interview process, including travel. Receives an offer within the range. Responds that he didn't realize how much he currently was earning and would require an additional \$20,000. Dropped from consideration.

What's causing this behavior? The root of it is the strong job market. Everybody who's anybody is being recruited, and the number of offers a person has in their back pocket seems to have become a fashionable status symbol. Consequently, there are many people entering the job market who are neither prepared for the process nor committed to its success.

There are some steps you can take to avoid the costly and time-consuming process of conducting interviews that do not produce a hire. The keywords are screen, screen and screen again.

- Discuss compensation early in the process. Define your hiring range and ask if it is within the acceptable limits. Then ask for the candidate's current compensation. Be prepared to terminate the interview process if the candidate will not provide the information. Ask for a W-2 or a current pay stub to validate the salary. Reconfirm the candidate's comfort with the hiring range as you move through the interview stages.

- Discuss start date before extending an offer. Local candidates should be committed to starting within two to three weeks of accept-

ing the offer; relocation may extend that to three to four weeks. If a candidate is not eager to start the new job, it may be a warning sign.

- Discuss geography. If the candidate is local, is the commute realistic? If the candidate must relocate, is your geography attractive to them and their family? Do they know the marketability of their house and has a real estate agent been contacted?

- When you think everything is in place for a successful start, contact the candidate at least weekly to determine if any assistance is needed, provide information and discuss the assignments and opportunities that await. If you don't get enthusiastic responses, probe for more information.

Will taking these steps guarantee you won't fall victim to unusual behavior? Based on my own recent experiences, the only guarantee is that if you don't screen thoroughly, you are likely to get hit. As long as the job market stays strong, a healthy level of skepticism is appropriate.

The famous Yogi Berra quote "It ain't over till it's over," certainly fits today's IT job hunter.

Schoff is president of Management Recruiters in Cedar Mountain, N.C., and specializes in placing network professionals. He can be reached at (704) 884-4118 or at [mrschoff@citcom.net](mailto:mrschoff@citcom.net).

### Questions?

Readers: Send your career-related questions to Frank Schoff and he will address them in future columns.

### MESSAGE

Send letters to [nwnews@nww.com](mailto:nwnews@nww.com) or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

### Sour grapes

From the article "Sun awaits word on Java standards bid" (Nov. 17, page 102) comes my nominee for this year's "What goes around comes around" award:

"Microsoft argued that Sun is trying to have it both ways by controlling the Java standards process while retaining trademark and licensing rights to the programming language. 'If Sun is approved as a PAS submitter, [it] could prevent products from being certified as conformant with ISO standards for competitive reasons,' said Cornelius Willis, Microsoft's director of platform marketing."

What does Willis think Microsoft has been doing for almost a decade with the





## Users help get directory spec on track

**A**s is often the case with standards work, the Directory-Enabled Network (DEN) specification has been embroiled in politics. Fortunately, a handful of corporate customers last month helped the vendors involved get their priorities straight at the first public meeting held to review the draft specification.

DEN is the brainchild of Microsoft Corp. and Cisco Systems, Inc. Last spring, the two companies pledged to create a common directory infrastructure that would unify the management of their products with Microsoft's Active Directory and allow network services to be applied on a per-user basis. The DEN specification emerged out of this partnership.

Although it's still preliminary, the specification begins to lay out an information model and the detailed directory schema necessary to integrate networks with directory services. Why is this work important? Because it promises to provide you with better control over your network. Rather than managing individual devices, you'll be able to centrally define and manage the policies that control the network and its resources.

However, to define and manage policies, you need a common store of detailed information about the network and its resources, such as data about users, applications, devices, protocols, media and the relationships among these elements. Here's where the directory comes in. Under the DEN proposal, network resources, such as devices, operating systems, management tools and applications, would use the directory to publish information about themselves as well as to discover and obtain information about other resources.

In DEN, the directory plays a new role. No longer a static repository for information, it provides an active way to relate information and control user-to-network interaction.

Clearly, DEN is a significant technology with far-reaching ramifications for the industry. Consequently, other directory vendors, such as Novell, Inc. and Netscape Communications Corp., and network vendors, such as Bay Networks, Inc., 3Com Corp., Cabletron Systems, Inc. and IBM, have a keen interest in how DEN will be defined.

The question is: How open will the process of defining this technology be? Microsoft and Cisco's competitors don't want to be squashed by titans or forced to implement a specification which they had no input in making. For their parts, Microsoft and Cisco have maintained that the work will progress more rapidly if the number of players involved is limited.

Squabbling over process easily could have derailed any progress if the IT managers at the meeting hadn't made it clear that they want this work to continue as quickly as possible. Furthermore, they want all vendors to support the same standards.

Such blunt talk indicates the level of pain most IT organizations are feeling. IT managers are grappling with a plethora of separate directories and multiple security schemes. The DEN work promises to provide a common directory infrastructure through which services, such as security, can be centrally provisioned.

On a more mundane level, IT managers simply would be grateful for the ability to store network hardware configuration information in a common repository, rather than having each device maintain this information in its own way. Simply having the configuration information centralized would make network modeling and deployment of quality-of-service capabilities easier.

However, this nirvana can't be reached until the industry rallies around a common approach and delivers interoperating components.

Microsoft and Cisco opened the process with a public review of the specification. At the meeting, officials from both companies voiced a willingness to create a steering committee, so that work could continue at a reasonable pace but with broader industry input. Since the meeting, the two companies have proposed that work continue through an ad hoc working group, which will be open to all interested parties. An advisory board composed of IT managers from the finance sector, heavy industry, telecommunications and academia will moderate the process and arbitrate disputes. Ultimately, the DEN work will be transitioned to a standards body.

It is noteworthy that customer input is influencing the process. By voicing their interest in the DEN work, IT managers at the meeting made it clear that vendors need to cooperate or users will vote with their dollars. Vendors heard the message loud and clear, and the move to set up an ad hoc working group is proof of that. While this is good news, IT managers need to keep the pressure on to ensure vendors don't backslide.

If you want to participate, check Microsoft's and Cisco's Web sites over the coming weeks for DEN information.

*Petrosky is a senior analyst with The Burton Group, an information services firm that provides in-depth technology analysis. She can be reached at (415) 572-0560 or petrosky@tbgroup.com.*



Windows environment? By having a certification process (designed for Windows 95) that can be the kiss of life or death for a software firm's products, and by effectively doling it out to products that complement, rather than compete with, Redmond's most formidable cash cow, has Microsoft never committed such a transgression?

I'd venture to say the Java community is more open than the Windows community in terms of who controls the future of the environment. The industry would drop Java if Sun attempted to usurp Java and reel it in the way Microsoft has kept a proprietary lock on Windows.

It seems inappropriate to hear cries of sour grapes from Gates and company. I don't think Bill will have to take out a

second mortgage on the chateau over this one, but it may help to refocus some competitive reflexes in the Seattle area, which have grown a bit dull over the last few "new releases."

*George Nezelek  
Chicago*

### Just the facts

Bravo to Dave Kearns for cutting right to the facts of the Microsoft Internet Explorer bundling issue "What an OS is—and isn't," (Nov. 24, page 24).

Unfortunately, since the definition of a lawyer is "one who can distort any set of facts for financial gain," these points will be twisted and/or ignored through the course of the litigation. The most galling aspect of this is Bill Gates standing before

the computer industry expecting us to believe he is looking out for users' interests.

*Jeff Dillon  
Bethesda, Md.*

### Microsoft has earned it

Mark Gibbs' column "Conspiracy theories: Aliens, CIA, Hoffa and Microsoft" (Nov. 24, page 68) tells it like it is. Microsoft has shown a propensity for putting out products that work well together and make my business clients more productive and profitable.

Microsoft has proven its dedication to supporting the user community through its products and to the development community by its support. From a development standpoint, we are moving forward every day in our ability to produce meaningful business software through Microsoft applications and tools. Forget the 80% who live in a

world without Microsoft and keep us up to date on potential problems with Microsoft products, which no doubt will be fixed in the near future, and point us in the direction of

enhancements we can expect from Microsoft.  
*Dick Paulson  
Owner  
Paulson & Associates  
Hoffman Estates, Ill.*

### Teletoons



Phil Frank and Joe Troise baha@sfgate.com

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# The age of being reasonable

Continued from page 1

The results? ATM growth is circumscribed and modest in LANs and WANs. Current implementations are quite sparse: Only 16% of respondents are using ATM in the local area and only 15% are using it in the wide area.

Network newcomer Gigabit Ethernet has gained even less ground. A mere 10% of respondents have deployed Gigabit Ethernet switches and more than half have no plans to use them in the future.

Present in 75% of the surveyed companies, Windows NT Server is beginning to raid NetWare's installed base. Although 51% of managers who run NT said they added it to support new applications, NT has displaced NetWare at 27% of those companies.

Not everyone is sold on Internet-based commerce. Nearly half of the respondents said it's not relevant to their businesses, while security and access issues remain jagged edges for companies that seek the green light.

However, Internet-based services are shaping up to be a viable choice for the corporate data backbone. Almost half of respondents are currently using Internet-based services as part of their backbones, and most of the remainder intend to be within three years.

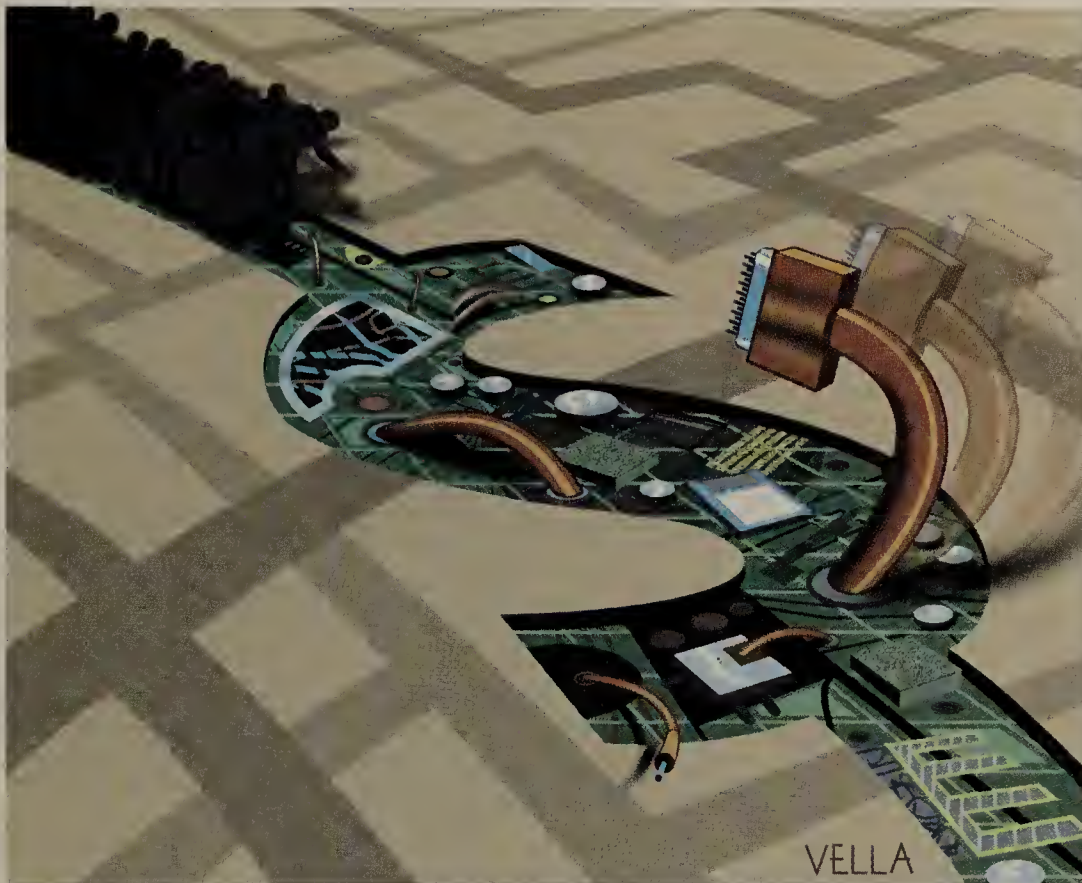
Thin clients, on the other hand, appear to be dead on arrival. Although folks are almost evenly divided on the merits of network computers (NC) and network PCs, only 26% plan to deploy them. End users are the ones sounding the death knell: 75% of respondents believe they will refuse to give up their PCs.

Regardless of the technology, the bottom line is respondents see a close tie between prudence and revenue, applications development and planning for next-generation infrastructure. Managers are scoring higher in their organizations by getting more performance out of existing networks than by forklifting to the future.

When administrators make a business case for technology deployment, they address unmet user needs and revenue opportunities instead of perceived bottlenecks.

High-speed backbones, new switches and software, remote access, thin clients and even intranets aren't worth the investment unless real-world applications exist to support them.

"In all, the data corroborates what we're seeing, namely that applications are driving the answers [to infrastructure change]," says Gerry Cunningham, principal at Deloitte & Touche Consulting Group's networking practice in New York.



lion institution simply doesn't need the bandwidth of ATM in the LAN or WAN, says Bill Harkema, telecommunications engineering manager at bank headquarters in Lansing, Mich. Cost and ease of use were other factors that contributed to the decision.

So where can you find ATM? It's most often implemented in the backbone of larger, Fortune 500-type businesses, says Dean Thompson, manager of network services for Cleveland-based Berish and Associates. MTD Products, Blockbuster Entertainment, Inc. and LTV Steel are just a few of the systems integrator's clients that are on the path to ATM.

"ATM is typically replacing either Fast Ethernet or, in some cases, regular Ethernet, and token ring is going to the wayward side," Thompson says. "I'm seeing IS power users and pro-

fessionals getting 100 megabit Ethernet switched to their servers and desktops, mostly for CAD and database applications."

ATM's got backbone in Virginia. The State of Virginia Information Technology Division manages 5,000 to 6,000 users in a private network that branches out to state agencies in 350 remote sites. The majority of the sites use frame relay to connect to each other, though the IT division gradually is implementing ATM backbones at more than 65 sites, says Rodney Taylor, a senior computer engineer. The state is migrating to ATM campus backbones to combine voice and data and to increase bandwidth.

"We're starting with 10 sites and then moving up to 68," he says. Taylor currently is testing ATM edge switches from ADC Kentrox, FORE Systems, Inc. and Cisco Systems, Inc., and expects to complete the upgrade within three to six months.

Taylor is in a distinct minority. Only 16% of

## Slow ATM growth in LANs & WANs



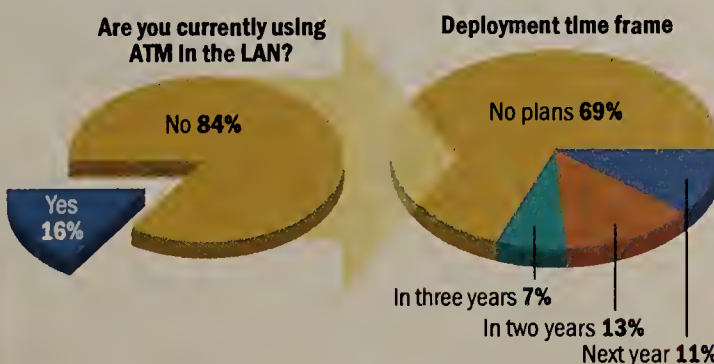
Most companies are taking a cautious and incremental approach to ATM. The survey shows that two-thirds of all respondents currently without an ATM WAN have no plans to deploy one. Of those, 84% say it's unnecessary or that other services suffice.

"ATM is still not generally there on a wide-scale basis," Cunningham says. ATM was previously procured as a way to buy frame relay services under a negotiated deal rather than at more expensive tariffed rates. Demand for ATM may lessen now that frame relay has become a nontariffed service, he notes.

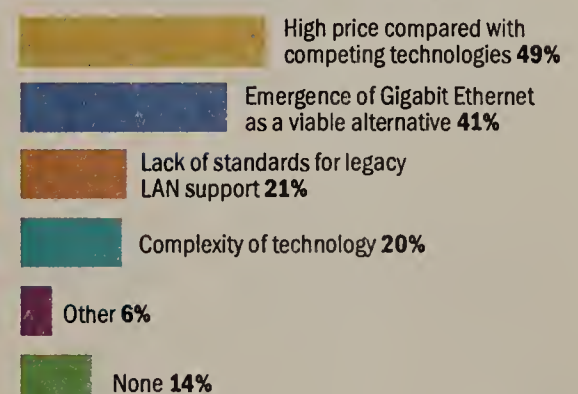
Michigan National Bank is one organization that chose frame relay over ATM. The \$10 bil-

### NO NEED FOR ATM'S SPEED

Few companies currently are using ATM in the LAN or WAN, and most don't plan to. Nearly half of the respondents who intend to implement ATM would rethink their decision if a competing technology emerged, and 41% would consider Gigabit Ethernet if it became a viable alternative.



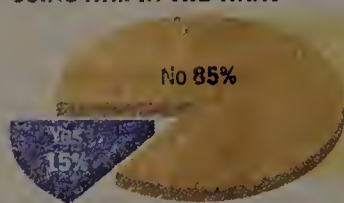
### Factors that could alter ATM deployment plans\*



\*More than one response allowed



# ARE YOU CURRENTLY USING ATM IN THE WAN?



(Totals were rounded to the nearest whole number)

respondents currently are using ATM in the LAN. A surprising 69% of non-ATM sites don't plan to deploy it in the campus, while those who do could be swayed by Gigabit Ethernet or another competing technology.

Nearly 50% would rethink future ATM deployment plans if something less expensive comes along, while 41% might abandon ATM plans if Gigabit Ethernet emerges as a viable alternative.

Gigabit Ethernet isn't on the syllabus at Virginia Western Community College in Roanoke. The school will implement a campus ATM backbone in the next few years that will evolve parallel to the school's FDDI ring, says David Harrison, technical support services manager at the college. ATM will deliver higher bandwidth between campus buildings and support video and data, which Harrison says are key to long-distance educational offerings.

Because the school already is linked to the Virginia Broadband Network via DS-3 ATM WAN links, ATM was a natural, scalable choice for the campus.

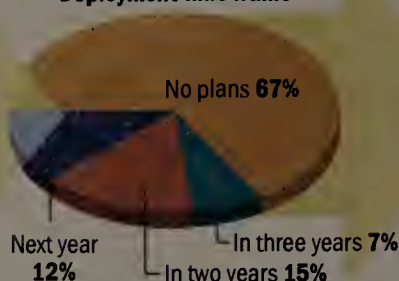
"We'd like to migrate directly to ATM and bypass Gigabit Ethernet switches," says Harrison, who believes it makes sense to develop a parallel network and avoid a forklift upgrade.

Harrison isn't the only respondent who's currently unmoved by Gigabit Ethernet and its high price tag. A mere 10% of respondents currently use Gigabit Ethernet switches, and more than half report no plans to use them in the future. What's more, ATM's maturity and the trust it commands from users give it a leg up.

"Nobody's paying for Gigabit Ethernet," says Steve Jennings, a systems engineer with Dallas-based network hardware vendor Sentient Networks, Inc. He thinks people are waiting for ATM to take off at the desktop. When it does, the resulting ATM price cuts could obviate Gigabit Ethernet, he says.

However, those who are interested in Gigabit Ethernet said its simplicity and high capacity are appealing. Virginia's IT division will deploy Gigabit Ethernet in its backbone because "it's a natural migration path," Taylor says. The outlook for Gigabit Ethernet also will get brighter when the standard is finalized and prices come down.

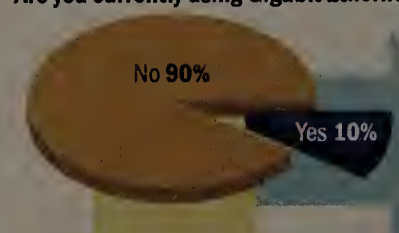
## Deployment time frame



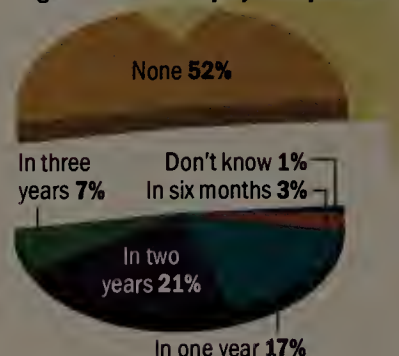
## GIGABIT ETHERNET GAINS LITTLE GROUND

You won't find Gigabit Ethernet switches in 90% of the companies surveyed, but more than half expect to be using them within two years. The technology's high capacity and simplicity appeals to future deployers, though many other respondents said they don't need that kind of bandwidth.

### Are you currently using Gigabit Ethernet?

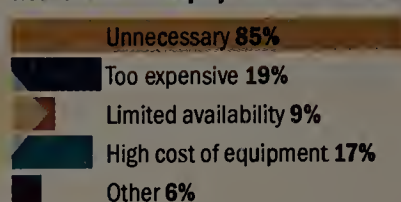


### Gigabit Ethernet deployment plans



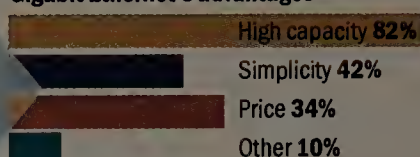
(Totals were rounded to the nearest whole number)

### Reasons not to deploy ATM in the wide area\*

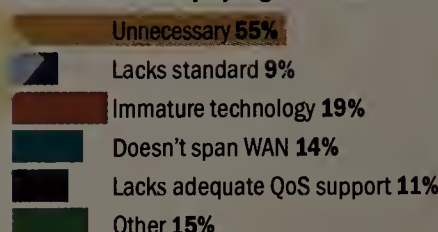


(\*More than one response allowed)

### Gigabit Ethernet's advantages\*



### Reasons not to deploy Gigabit Ethernet\*



\*More than one response allowed

## NT Server cleans up



Survey respondents were much more resounding in their opinions about NT Server — 75% already are using the network operating system (NOS), primarily as an add-on to support new applications. Novell, Inc.'s loss is Microsoft Corp.'s gain — 27% of the NT users said NT is displacing NetWare at their organizations. NT's momentum is building in the academic environment, says Al Andrews, dean of business and technology at the 7,000-student Kansas City Community College. The NOS is proliferating all over campus thanks to high commercial demand for NT Server training, Andrews says. "Windows NT Servers are replacing NetWare, and businesses want classes in it."

The college also has substantial financial motivation to use NT. "When I go with Novell, I'm paying industrial prices," Andrews says, whereas Microsoft offers the school educational discounts.

"Everybody is getting the Windows NT environment, and NetWare is losing share every day," says Berish & Associates' Thompson. "Novell ignored its client base, hasn't made major improvements and tried to get into other areas that Microsoft was good at," he asserts. Novell's

own tools make it easy to migrate to NT, he adds.

However, others aren't yet ready to write the eulogy for NetWare. "NT will continue to grow, but won't replace NetWare services anytime soon," asserts Bruce Curtis, network consultant at North Dakota State University in Fargo.

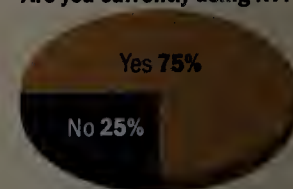
Respondents' concerns about NT Server range from its lack of a comprehensive directory to the product's Microsoft-centric approach.

The jury is still out on Active Directory Services (ADS), the next-generation directory that will ship with Windows NT Server 5.0 when it's released next year. More than a quarter of NT users plan to make do with the existing NT domain structure; 24% definitely intend to implement ADS. But most are undecided, and say it depends on many factors.

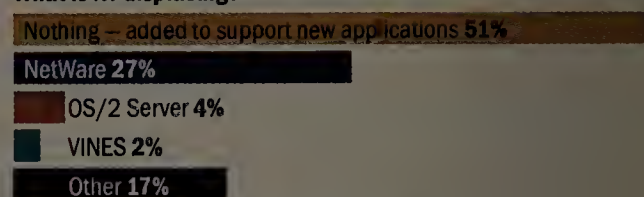
## NT STAKES OUT NEW TURF...

Windows NT Server has a home at 75% of the companies surveyed. Most companies are deploying NT to support new applications, but 27% of respondents said NT has encroached on NetWare at their sites.

### Are you currently using NT?



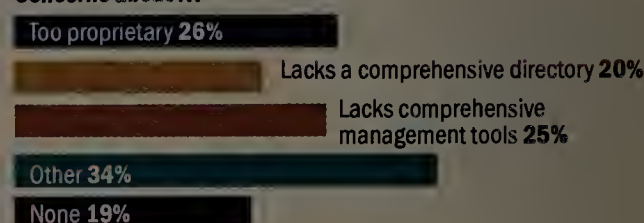
### What is NT displacing?



(Totals were rounded to the nearest whole number)

## ... DESPITE USERS' CONCERNS

### Concerns about NT\*

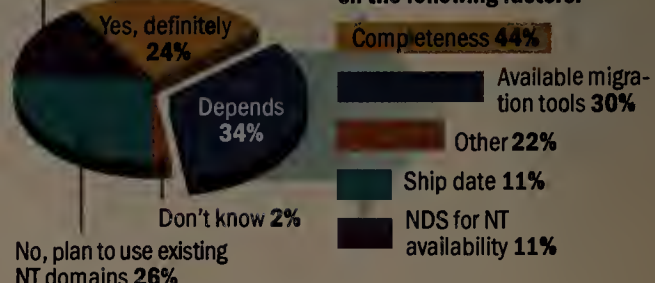


\*More than one response allowed

## ADS AMBIVALENCY

Many respondents said they might implement Microsoft's forthcoming Active Directory Services, depending on several factors. More respondents said they'll pass on ADS than those who said they'll definitely deploy it.

### Do you plan to implement ADS? Companies that are considering ADS said their decision depends on the following factors:\*



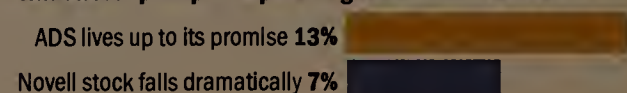
(Totals were rounded to the nearest whole number)

\*More than one response allowed

## GIVING NETWARE THE BOOT

A good number of respondents pledged allegiance to NetWare, though others said they could be convinced to switch entirely from NetWare to NT LANs.

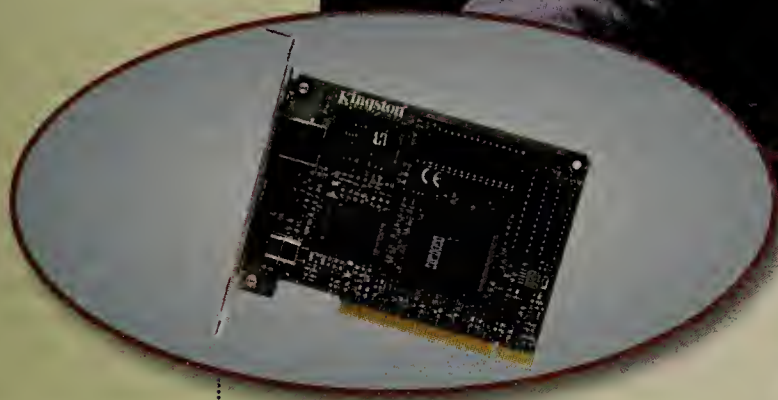
### What would prompt complete migration from NetWare to NT?





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SMC 10Mbps	SMC8432T	\$61
Allied Telesyn 10Mbps	AT-2450T	\$55
<b>Kingston 100Mbps</b>	<b>KNE100TX</b>	<b>\$49</b>

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## Internet implementations



Respondents are almost evenly divided on Internet-based commerce. While a full 58% said they were exploring electronic commerce opportunities on the 'Net, the naysayers cited irrelevancy to their businesses and security

reasons as the top reasons to stay away.

Of those exploring Internet-based commerce, the majority said potential product sales applications are compelling, followed by electronic data interchange.

Managers are more bullish about using the Internet for other purposes. Nearly half already use Net-based services — e-mail, file transfer and tie-ins to remote locations — as part of their corporate data backbone. And roughly 50% of those who don't use the Internet expect to use it as part of their corporate backbone within the next three years. "The potential is mind-boggling," says Ron Miskie, chairman of Knowledge Transfer International, a New York-based IT training firm. "A lot of people want to put more data on the Internet, and there's a growing appetite for multimedia applications, but there's a long way to go with security."

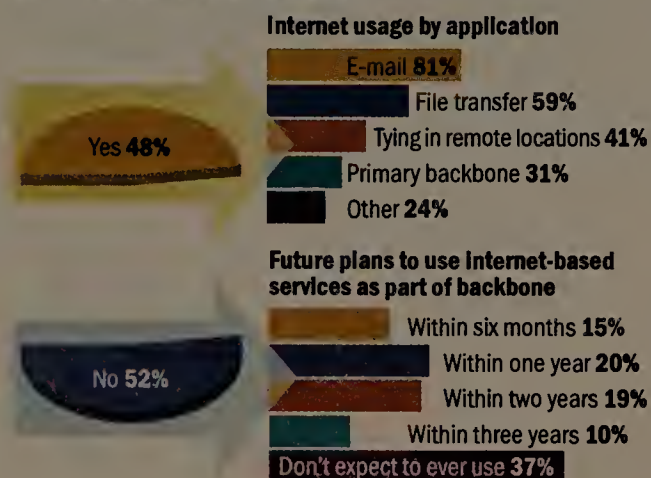
Indeed, hacking is a big concern for prospective Internet-based commerce deployers — 51% said security problems could thwart their plans.

Some network consultants say that very few effective Internet or intranet commerce products exist. "I'd have to say that the e-commerce aspect is hype," says Sentient Networks' Jennings. "I'm not seeing a big expansion."

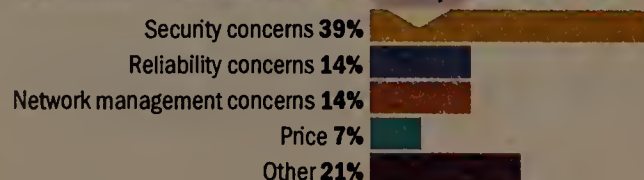
### THE INTERNET HAS BACKBONE

Internet-based services are part of the corporate data net backbone at 48% of respondents' sites. More than half of the other respondents don't intend to be using the services for this purpose within three years, and 37% said they don't expect to ever use Internet-based services as part of their backbones, most often citing security concerns as the big negative.

Are you currently using any Internet-based services as part of your corporate data net backbone?\*



Reasons not to use 'Net-based services as part of backbone

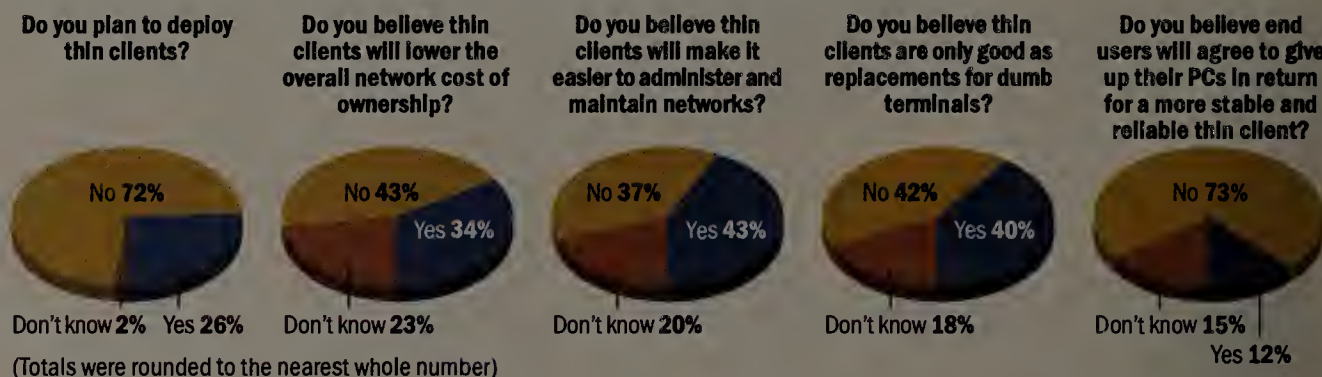


(Totals were rounded to the nearest whole number)

\*More than one response allowed

### THIN CLIENTS ARE STARVING

Almost three quarters of respondents have no intention of deploying thin clients, be they NCs or network PCs. Although respondents are fairly evenly divided on the merits of thin clients, 73% said users won't be willing to trade in their PCs.



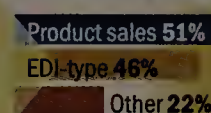
### 'NET-BASED COMMERCE EXPLORATION

Internet-based commerce has won over the hearts of only 58% of respondents. The other 42% aren't exploring it, primarily because of irrelevancy to their businesses and security concerns. Security is a hot issue for potential Internet-based commerce implementers too — 57% said security problems could thwart their plans.

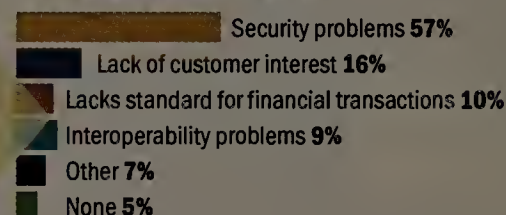
Are you currently exploring Internet-based commerce?



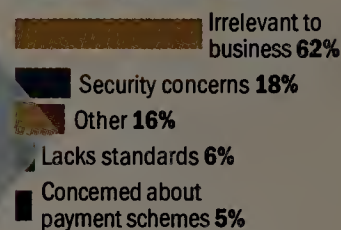
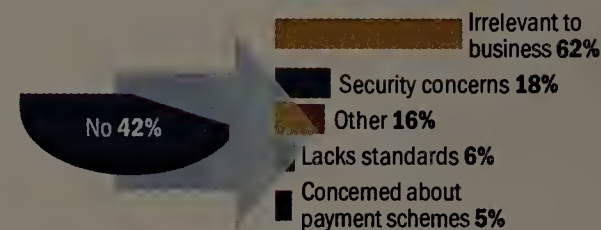
Applications explored for Internet-based commerce\*



Factors that could thwart plans for Internet-based commerce



Reasons for not exploring Internet-based commerce\*



(Totals were rounded to the nearest whole number)

\*More than one response allowed

However, timing may have everything to do with future Internet commerce expansion. The real boom could happen over the next 12 to 24 months, notes Deloitte's Cunningham.

His clients are increasingly considering migrating sales and support to the Internet through systems such as Internet-based call centers. Any application that gives people better, cheaper and faster ways to interact is bound to be successful, he says.

Some consultants argue that corporate intranets and remote access devices will become intrinsic to the process. Almost 68% of survey respondents already have a corporate intranet, and another 35% plan to have one within a year.

Remote access requirements within companies also are growing rapidly, according to the majority of managers surveyed. Web utilization and group collaboration tools are driving the need for more bandwidth. Already in use at 26% of the surveyed companies, virtual private networks will expedite secure remote access and also may be just the boost Internet-based commerce needs.

The future doesn't bode quite as well for thin clients — be they NCs or network PCs. Although technology planners are closely divided on the potential benefits of thin clients, only 26% of respondents plan to implement them. Those pesky users may bear part of the blame — 73% of those surveyed said users will refuse to give up their PCs in return for stability and reliability.

"We have no plans to use thin clients, just full-blown PCs," says Taylor of the state of Virginia. "We're using a lot of applications that require the end user to have his own microprocessor." Thin clients approach a risky

technology model that many academic IT organizations can do without, says Virginia Western Community College's Harrison.

"We don't want to be on the bleeding edge, and we don't want to hold the sword that does the bleeding," he says. "We want proven technologies."

However, NT fan Thompson, of Bearish and Associates, is enthusiastic about NT's forthcoming support for Citrix's Winframe because it lets users of disparate platforms connect to Windows applications on servers. He says thin clients could come on strong for certain vertical applications such as data entry or billing inquiries.

The bottom line to technology planning is everything is driven by applications, concludes Deloitte's Cunningham. "Managers need to understand the application development cycle to understand what's happening on their networks. You can't make a decision in one without the other."

Emmett is a freelance writer in Wallingford, Pa. She can be contacted at ArielleEm@aol.com.

Go online for the complete survey results and other technical planning resources.

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5032

### How we did it

This year's Technology Planning Survey was conducted by First Market Research in Austin, Texas, and was sponsored by Deloitte & Touche Consulting Group.

First Market Research contacted 300 Network World readers who are responsible for strategic network planning at their organizations. Respondents were interviewed via telephone in October.



OCTEL UNIFIED MESSENGER FULFILLS THE UNIVERSAL  
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## Voice mail meets e-mail

By Jeff Dunkelberger



ou're at the airport checking your voice mail when you discover that your colleague has e-mailed you the figures you need to complete your presentation. Now what? Do you haul out your laptop, scout around for a telephone you can plug into, dial in, retrieve the message and race to the gate before it's too late?

Not if you have the latest product from Lucent Technologies, Inc.'s Octel Messaging Division. Octel Unified Messenger (UM) works in tandem with Microsoft Corp.'s Exchange to provide a universal in-box from which a user's voice and e-mail messages can be retrieved by either phone or PC.

Octel has done a fine job solving the difficult problem of integrating voice and text messaging.

UM provides basic voice mail functions and the ability to store, delete, reply to or forward e-mail or voice mail messages by telephone or computer.

UM links a company's PBX with Exchange Server, which UM uses to store and manage message information. More than a dozen PBXs are available for selection during installation; others are supported via a generic connection

that requires extensive custom configuration. You can access the unified mailbox from any PC using the Exchange client, Microsoft Outlook, Outlook Express or any Post Office

Protocol 3 (POP3) mail client. Users simply click on a message header to read the e-mail or listen to the voice message (see graphic, page 52). You can play messages using your PC's multimedia capabilities or via a user-designated telephone controlled by the PBX.

Telephone access to messages is just as easy. UM retrieves voice messages

from the Exchange Server mailbox and employs a patented text-to-speech feature for playback via the PBX. The computer-generated voice takes a little getting used to, but users have the ability to save, forward, delete and reply to voice or e-mail messages using any telephone.

### NOTES SUPPORT COMING

While the first implementation of UM is based on the client/server architecture of Microsoft Exchange, Lucent says future UM releases will support Lotus Notes Mail, as well.

For our story announcing UM's release, turn to Network World Fusion.



The ability to generate a voice message and have it delivered as e-mail to a recipient is not possible with UM, which does not support speech-to-text conversion. Also on our wish list is fax service integration, which Octel says it plans to bundle into a future release.

### What does it take?

UM requires several key components. You install the Octel software on a Windows NT Server, which then acts as the voice server, providing the link between the LAN and the PBX. Exchange Server can run on the same machine as the voice server.

Octel recommends a tracing server on a separate machine for any installations using eight or more standard phone lines. A tracing server tracks voice mail activity and logs information used by the product's reporting application to generate reports and statistics. Only the Octel voice servers' activity is recorded; the tracing server does not provide a history of the Exchange Server's e-mail activity.

Voice mail domains, similar to NT operating system domains, comprise a hierarchical organization of voice mail attributes for enterprisewide administration. You can manage voice mail components and the voice mail domain hierarchy through UM's Voice Mail System Configuration tool.

All security features are implemented as extensions of NT's underlying security layer. The administrator can set specific user rights depending on whether a message is voice mail or e-mail. For example, read-only rights can be granted to an assistant who needs to act on important e-mail or voice mail while the mailbox owner is traveling or to members of a work team to ease information sharing.

Access to voice messages and e-mail through the Octel server's telephone user interface is protected by a user mailbox number and password. This provides an extra

## Net Results

	PROS	CONS
<b>Octel Unified Messenger</b> Lucent Technologies, Inc. Octel Messaging Division (408) 321-2000 <a href="http://www.octel.com/unified.messenger">www.octel.com/unified.messenger</a> \$20,910, including one Rhetorix VPS-4 board and a 100-user license	<ul style="list-style-type: none"> <li>▲ Integrates voice and e-mail services in one mailbox, making both accessible from a PC or telephone</li> <li>▲ Works with any e-mail client for Exchange Server, including POP3 clients</li> <li>▲ Text-to-speech functions ease access and use</li> <li>▲ Uses existing Exchange Server architecture and directories</li> <li>▲ Users who know Exchange can be functional in minutes</li> <li>▲ Excellent documentation</li> </ul>	<ul style="list-style-type: none"> <li>▼ Does not support fax services</li> <li>▼ No native database support</li> <li>▼ Requires proprietary voice cards on server</li> <li>▼ Requires Microsoft's Exchange Server</li> </ul>



level of access control to protect phone access and a quick way to authenticate users, using keypad numbers instead of characters.

Users' voice mail mailboxes are administered through the Exchange Server administrator program in the same way e-mail mailboxes are administered. Users can change limited functions, such as voice mail passwords and voice greetings, from either client interface.

Because UM is integrated with Exchange, it is easy to move users from one server to another whenever they change locations.

Any change in one Exchange Server directory is replicated to all other Exchange directories. Messaging objects, such as voice messages and e-mail, also are replicated via Exchange.

User directory objects, including voice and e-mail messages, are replicated to remote messaging servers along with a global address list of all users.

## Getting it installed

Lucent Computer Telephony Products, formerly Rhetorex, Inc., provides the only supported voice cards for UM. Some telephony knowledge is required to configure the VPS-4 voice cards, as is familiarity with NT and Exchange Server basics. Part of the process

cate and trigger voice mail activities may be misinterpreted by the voice server.

The voice server software uses a wizard to configure the components and their associated directories. It also lets administrators enter the names and passwords of service logon accounts and their domain names.

They then specify the Exchange Server tracing server, the PBXs used in the voice mail domain and the number of voice ports on the server.

Rhetorex VPS-4 or VPS-4i cards must be installed. They provide four to 24 ports per server for telephone access and playback. Clients are available for Windows 95 and NT only. Octel says UM will support 25 to 500 users per server, although actual numbers will vary according to length of messages, length of user connections and frequency of telephone port access.

A key factor in planning for UM implementation is estimating the disk storage necessary for

## Score Card

	Voice/text compatibility (30%)	Administration (25%)	Client interfaces (20%)	E-mail/voice integration (15%)	Installation (5%)	Documentation (5%)	Total score
<b>Octel Unified Messenger</b>	9 x .30 = 2.7	7 x .25 = 1.75	8 x .20 = 1.6	9 x .15 = 1.35	7 x .05 = 0.35	9 x .05 = 0.45	<b>8.2</b>

Individual category scores are based on a scale of 1-10. Percentages are the weight given each category in determining the total score.

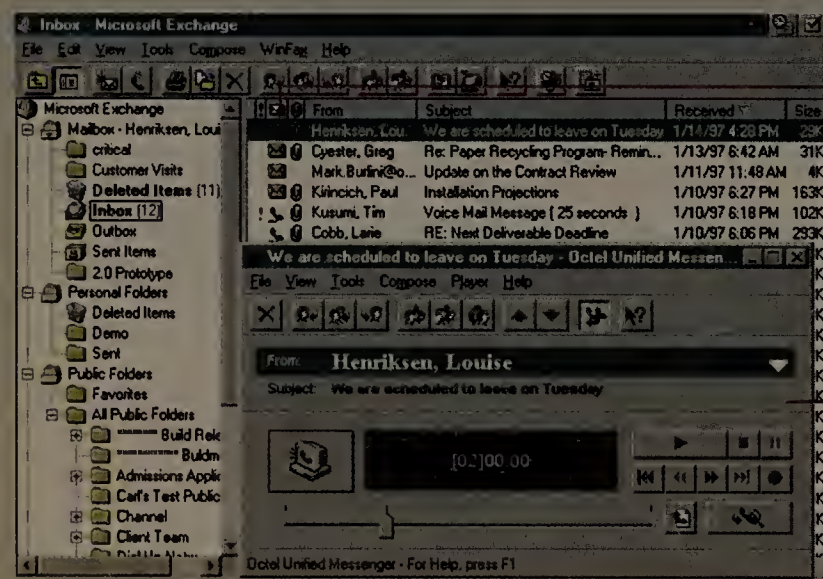
## How We Did It

We installed the components on a single Dell Computer Corp. Pentium server with 96M bytes of RAM, running Windows NT Server 4.0 with Service Pack 3 and Microsoft Corp.'s Exchange Server 5.0.

We used a Lucent Computer Telephony Products VPS-4 four-port voice card with a Panasonic 16-extension hybrid phone system. A Creative Labs, Inc. Sound Blaster-compatible sound card, speakers and a directional microphone were the multimedia components on the client PCs. Microsoft's Outlook 97 was the client software we used to access messages.

To test the system, we sent voice and document attachments to e-mail and voice mail by phone and PC. We retrieved messages, including their attachments, from the phone and PC.

## RETRIEVING VOICE MAIL FROM EXCHANGE



An envelope icon indicates e-mail, and a telephone handset icon indicates voice mail.

The voice mail player lets you listen to messages through your PC speakers or a designated telephone extension.

includes "characterization," or capturing the unique sounds for many telephone activities into a tone file UM uses to trigger its activities. The tone file must be created for each card on each voice server prior to each Octel voice server's installation.

That's because even the slightest differences in these tones, though imperceptible to the human ear, can be detected by the voice server and will generate errors in the software. If this step is not done with care, the normal tones used by the phone system to communi-

voice messages, which generally are much larger than text messages. UM uses its own compression algorithm, which yields 4K byte/sec for voice storage.

Thus, at roughly one minute per message, 200 users with 30 minutes of saved voice messages each would require 1.44G bytes of disk space. Exchange can impose storage limits that can help to contain growth.

The documentation for UM is magnificent. It consists of five volumes and a reference card for telephone access. The documentation

covers confusing topics well, and reading it is essential to an overall understanding and successful implementation of the product.

## What it all means

In the quickly changing world of corporate messaging, Octel has delivered a fine solution to a major problem. UM bridges the gap between the telephone and the PC by combining e-mail and voice messaging.

By making both kinds of information accessible from virtually anywhere, UM makes staying in touch easier for everyone in the organization.

The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products.

Dunkelberger is a Microsoft Certified Systems Engineer and a Microsoft Certified Trainer. His firm, Intelligent Information Systems, Inc., provides corporate network consulting and training services to companies worldwide. He can be reached at [i-squared@msn.com](mailto:i-squared@msn.com) or [www.i-squared.com](http://www.i-squared.com).





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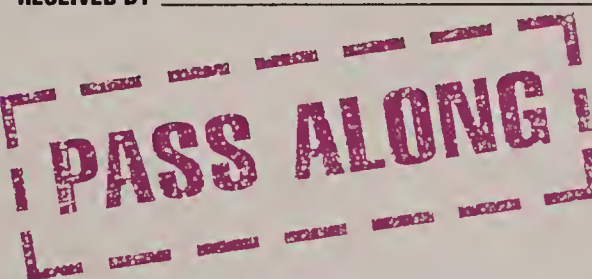
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# Management Strategies

## Cross-training at work

*Let your IT staff strengthen different muscles and gain new skills and perspective.*

**T** By Tom Duffy

Technicians in the IT department at Hewitt Associates LLC, in Lincolnshire, Ill., often heard grumbling about sluggish network response times. But when they checked the monthly averages, they couldn't see what the griping was about.

Agents for the human resources management firm typically were able to pull up the records they needed in just a few seconds.

However, when the firm began cross-training its employees and IT workers looked over the shoulders of users in the benefits administration department, they realized that a single day of slowed network response time was a significant impediment, even if it didn't skew the monthly average.

"We realized that even though the average for the month might have been stellar, they lost a whole day of productivity," says Dan Rubin, group IT manager. "Cross-training makes you a much better, more attentive network manager."

Hewitt is one of a growing number of companies that routinely moves technical employees from one division into another for a few days or weeks. On any given day at firms where cross-training occurs, sales staff might be managing the help desk and network managers might be sitting in with end users.

Administrators say the benefits include improved network management, stronger employee relationships and more effective problem solving. There also is a significant boost in morale that comes from giving employees a respite from their narrowly focused roles.

Though it's not always the goal of the programs, managers also cite a greater ability to move employees among different departments as work ebbs and flows.

For example, employees in Progress Software Corp.'s corporate engineering support division, a sales arm of the Bedford, Mass.-based firm, need to know enough about the company's relational database products and development tools to be able to explain them to prospective customers. But unlike their colleagues in many rival firms, they also need



Dan Rubin and John Kristoff of the IT department of Hewitt Associates say their company's cross-training efforts could even take them to the corporate cafeteria's kitchen.

DAVID JOEL

to answer more complex questions from existing customers. That's because the employees are expected to work in the technical support center at Progress for up to several weeks per year as a way of gaining a broader perspective on the company and their roles within it.

"Companywide this is a good thing," says Jennifer Stiller, HR manager for Progress. "It makes for employees with a better appreciation for one another and the stresses and strains of what their peers are going through. And it certainly provides them with a greater breadth of technical knowledge."

At Progress, technical support workers who dip into corporate engineering support gain an appreciation for what customers want from the vendor's products. Meanwhile, trainers are given the opportunity to go on the road several weeks per year, switching places with Progress' team of consultants.

At Hewitt, IT employees routinely sit in with workers in the Total Benefits Administration unit, the division that handles the administration of fringe benefits such as health care and 401K plans for thousands of companies throughout the world.

When John Kristoff, a technician in Hewitt's network group, dipped into the benefits unit recently, he was able to give a new workgroup administrator a personal seminar on LAN technology, PC hardware, PC software and support techniques. The woman's responsibilities included maintaining identifications and user attributes on a LAN that supported up to 80 people. He gave her tips on defining access rights and deleting lists of queued print jobs, and helped her gain a basic under-

standing of how a network functions.

"Instead of muddling through solutions based on trial and error and wasting precious time, she felt comfortable coming to someone nearby that could answer most any question she had," Kristoff says.

Rubin points to another benefit of the program for his staffers. "Getting a chance to see how putting in that router improves throughput and seeing for themselves when our people are able to get to information more quickly gives them a real sense of pride. They can really see how they are helping move the organization ahead," he says.

Cross-training has been a staple of life at HealthShare Technology, Inc., in Acton, Mass., says Eric Meyers, HealthShare's vice president of marketing. HealthShare builds software and related databases designed to help hospitals and health care organizations make rational economic decisions.

However, managers at firms where cross-training is used extensively say the practice has a few potential pitfalls. "When you are working outside your function, there can be some things you need the expert for," Meyers says. "You have to make sure you are recruiting people who are smart enough to know when they are in over their heads."

Stiller agrees that cross-training needs to be used judiciously, but says it is worth the effort.

"What you gain far exceeds what you might lose. I believe better-trained, happier, less-stressed employees certainly affect the bottom line," she says.

Duffy is a freelance writer in Somerville, Mass. He can be reached at [tduffy62@compuserve.com](mailto:tduffy62@compuserve.com).

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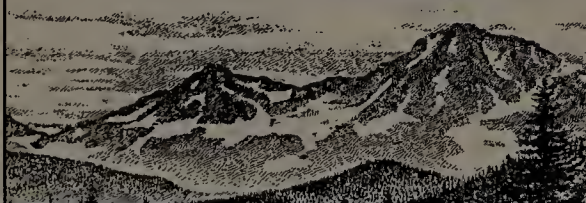
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## NETWORK ENGINEER/MANAGEMENT



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## Network World's Annual Power Players Issue.

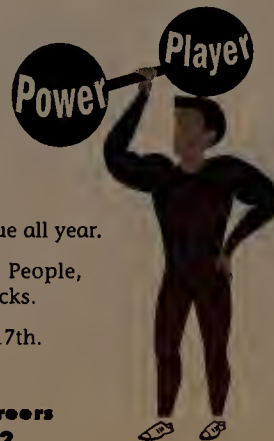
December 29 / January 1, is a don't miss "Keeper" issue with bonus distribution to top financial analysts.

Your recruitment candidates, our readers, will refer to this issue all year.

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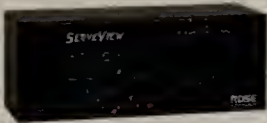
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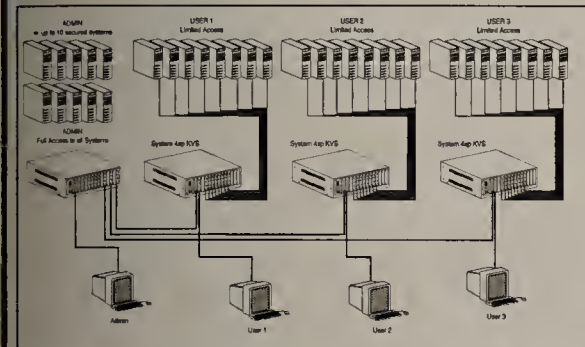


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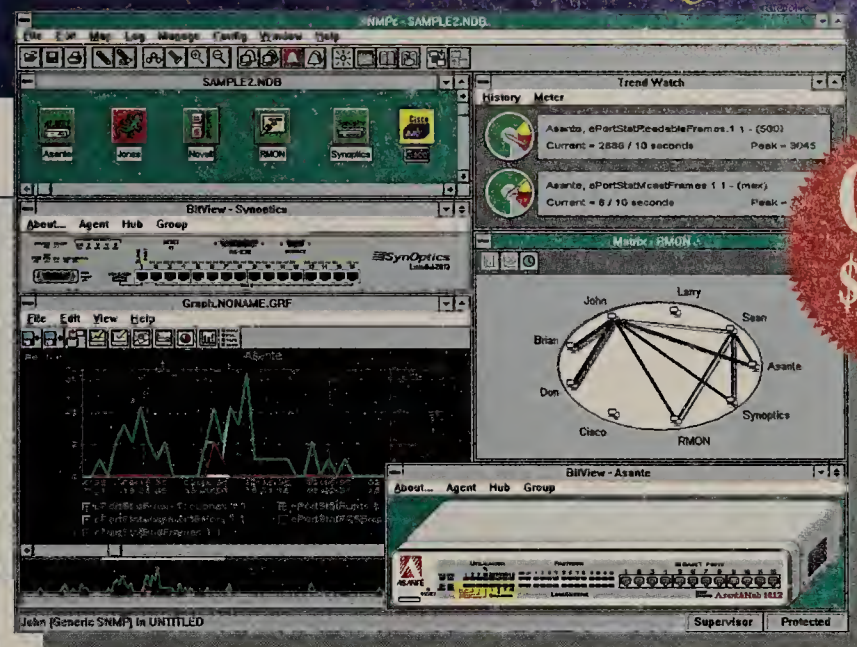
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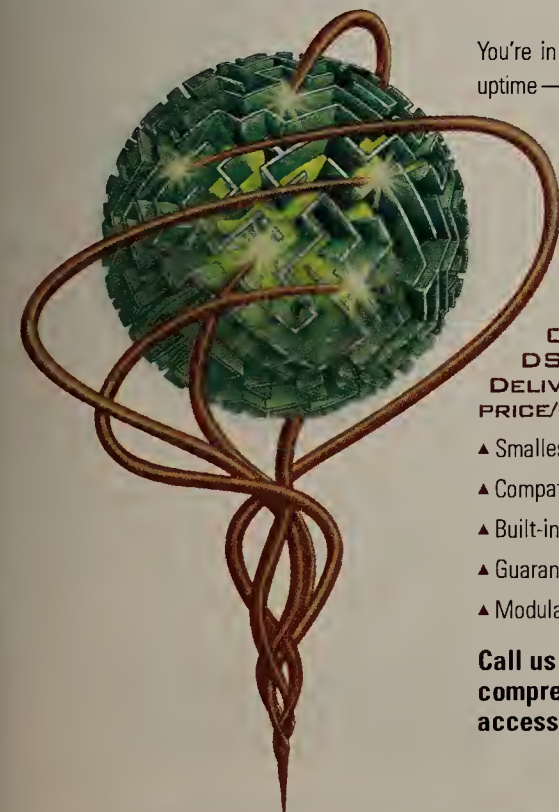
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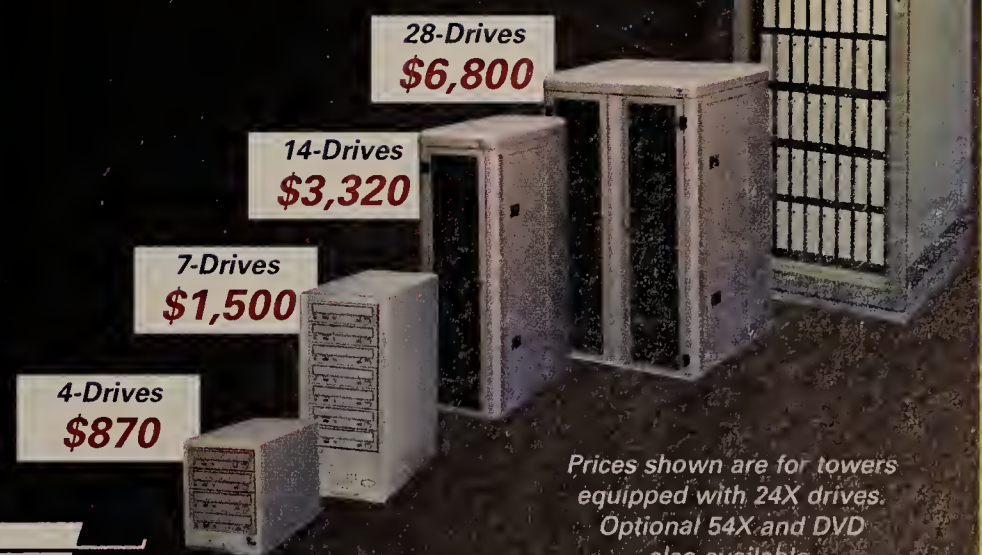
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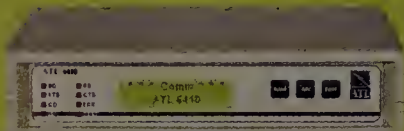


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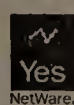
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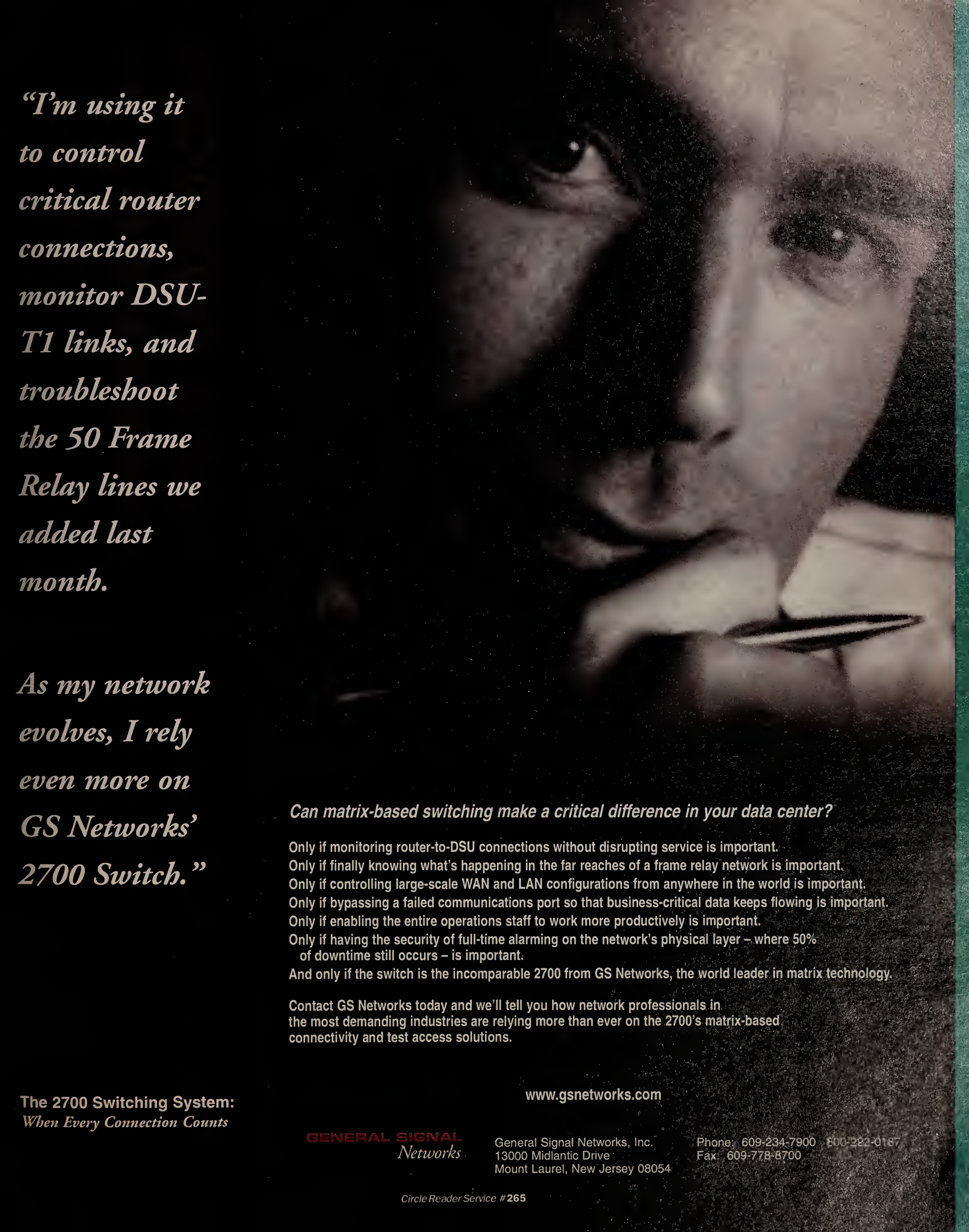
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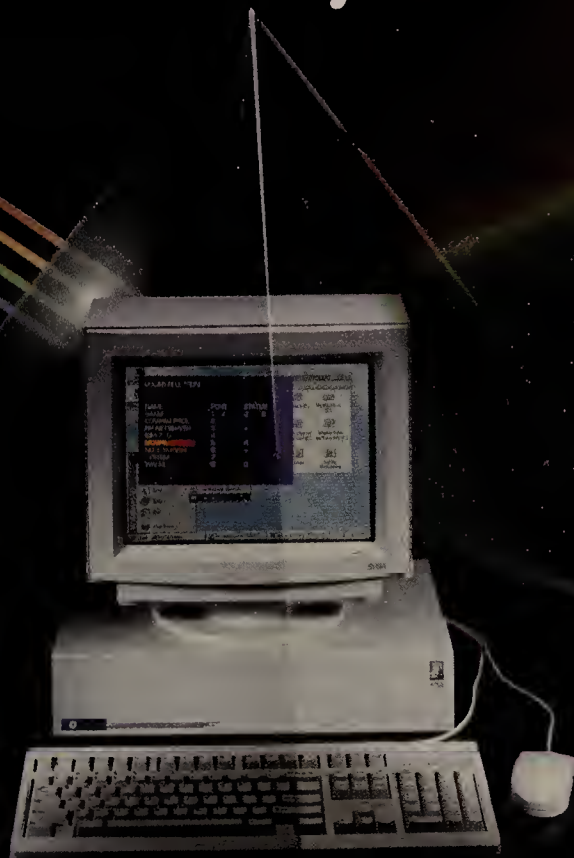
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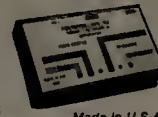
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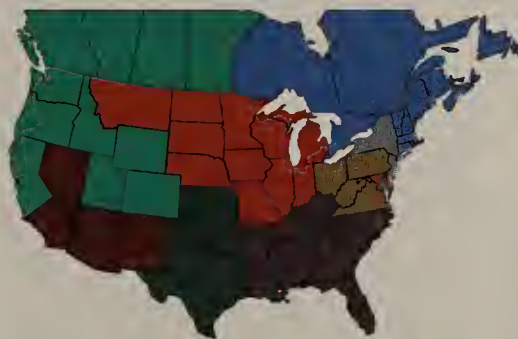
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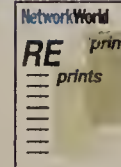
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## Ipsilon

Continued from page 1

strident antistandard rhetoric, best-of-show recognition and financial backing from Cabletron Systems, Inc. and Digital Equipment Corp., Ipsilon just could not establish a beachhead in the enterprise.

"We bet on the fundamental premise that corporate network backbones are congested and that routers were the bottleneck," said Ipsilon President and CEO Brian NeSmith. "We found that most corporate backbones weren't congested."

Ipsilon also discovered that shortly after turning everyone on to IP switching, Cisco froze the market with Tag Switching and Multi-protocol Label Switching.

And Ipsilon's value plummeted because proprietary Layer 3 switching technologies in vogue 21 months ago — such as IP switching — became passé, analysts said.

"It's obvious that Ipsilon basically failed in their mission to establish IP switching," said David Passmore, president of Decisys, Inc., in Herndon, Va.

"Quite frankly, the whole cut-through routing technique embodied by IP switching, 3Com [Corp.'s] FastIP and Cabletron's SecureFast [doesn't] make sense anymore in this era of gigabit, wire-speed routers."

Ipsilon's strident marketing messages also did not help its cause. Ipsilon had a good idea, but it was wrapped in so much Cisco and ATM Forum bashing that people got turned off.

"Everybody loves the David and Goliath mentality," said Craig Johnson, principal analyst at Dataquest, Inc. "But that doesn't necessarily help win business. What really matters in the end is business and generating revenue."

"You can only attack the competition so much before people start to ask, 'Well, what do you have?'" said Fred McClimans, president of Current Analysis, in Sterling, Va.

Others say talk was Ipsilon's biggest asset.

"They helped themselves from all the publicity; it got them in a lot of doors," said Eric Hindin, an analyst with The Yankee Group, in Boston. "Where they fell down was

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### The birth and death of Ipsilon:

**March**  
Ipsilon debuts with an innovative IP switching technique.

**September**  
Ipsilon sponsors IP switching showcase at NetWorld+Interop; Cisco announces Tag Switching.

**January**  
3Com, Cascade and IBM announce support for Ipsilon protocols.

**May**  
Digital acquires a \$5 million stake in Ipsilon.

**November**  
Ipsilon announces support for Cisco's key routing protocol in IP switching software.

**April**  
Cabletron invests \$20 million in Ipsilon; Ipsilon valuation pegged at \$400 million.

**December**  
Nokia acquires Ipsilon for \$120 million.

simply that they couldn't measure up."

Bunk, NeSmith said.

"Companies don't buy other companies based on hype," he said. "Typically, when you buy a private company you spend a lot of time and energy understanding the technology and the people and the products that they have."

You also spend a lot of time understanding the customers, which Ipsilon did not do enough of. Though Ipsilon claimed that its customer base continually was expanding — between 60 and 80 at last count — Vice President of

Marketing Larry Blair kept referring reporters to the same three or four until two months ago.

"I'm kind of depressed," said Phil Emer, assistant director for network technology development at North Carolina State University in Raleigh, and one of the three or four users on Blair's list. "They just proved it's going to take more than a good idea and a bunch of smart guys to dethrone Cisco."

Perhaps customer count was an indication that Ipsilon had to tone down its hype quite a bit before heading into the telco/service provider market.

"I don't expect we're looking to make a full frontal assault" into that market, NeSmith said. "We're saying, 'How can you deliver high-performance, lower cost solutions for customers going forward?' We believe that we have good products for servicing those types of customers."

And Nokia gets Ipsilon at a good price. Analysts say that a year ago, Ipsilon's value was close to a half billion dollars.

"They should have sold before they shipped any product. Then they could've gotten more," Hindin said.

"It's interesting that an organization that got that much hype has sold for that little," said Thomas Nolle, president of CIMI Corp., in Voorhees, N.J. "There's no relationship between image and substance anymore."

NeSmith believes the price is right for Nokia and Ipsilon.

"What we're being compared to in many cases are companies that were acquired with currencies that in the last year have plummeted. They're typically one-third to one-fifth of their value," he said.

Ipsilon will become part of Nokia Telecommunications. Nokia plans to retain Ipsilon's 100 employees and maintain operations in Sunnyvale.

Founder and Chief Technology Officer Tom Lyon will continue to orchestrate technical development, and NeSmith will become a Nokia vice president in charge of routing products.

NeSmith said the IP switching song now is an old one.

"We're pigeonholed as a battle between IP switching and Tag Switching," NeSmith said. "[But] we've been focused on a completely different segment of the market with a very different strategy than was originally announced." ■

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## Meltman

Continued from page 1

not be vulnerable to something like Land Attack," said Breton, who also uses the moniker "M3lt" in some of the Usenet groups and chat rooms which form a kind of watering hole where hackers and security professionals uneasily coexist on the Internet.

Officially known as land.c code, Land Attack works by tricking the targeted machine into trying to set up a TCP session with itself. If the machine falls for this form of IP spoofing, it goes into a TCP closed loop and has to be physically rebooted.

A number of security experts, including Chris Klaus, chief technology officer at Internet Security Systems, Inc., agree there is no reason a machine would want to talk to itself like this. Systems should be designed to prevent such attacks.

Breton said that when he released Land Attack on the bugtraq Usenet group, he was only aware it would make Windows 95 computers hang up Windows 95. He even messaged Microsoft Corp. about it.

"I can't even use land.c because my service provider in Canada, Videotron.net, pre-

vents IP spoofing," Breton said. "I admit releasing the bug into the public wasn't the most responsible thing to do. Land.c is spreading."

Indeed, it is being used to crash small hosts and as a weapon on Internet Relay Chat

is from systems administrators. They're calling me 'stupid,' 'dumb,' an 'ass - - -'." The love mail seems mainly to be from denizens of the Internet who have more destructive tendencies.

Breton said he decided to

### TALKING TO YOURSELF

How Land Attack, officially known as land.c code, works:

1 A hacker on Computer A sends a synchronization (SYN) packet to Computer B, but swaps out its return address for the IP address of the destination device.

Computer A: IP address  
ccc.ccc.ccc.ccc

Computer B: IP address  
ddd.ddd.ddd.ddd

2 When Computer B tries to acknowledge receipt of the transmission, it sends to its own address, meaning it sends the message back to itself, resulting in a loopback condition.

(IRC) channels. "The IRC is like a shooting range," and people are using Land Attack to blow each other off "in channel wars," he said.

Breton said he also now is being bombarded with a huge amount of "hate mail and love mail. The hate mail

post land.c because he thought the information about the security vulnerability eventually would leak, and he wanted to take credit for the discovery.

In retrospect, Breton said maybe he should have gone to the newly formed Canadian Computer Emergency Response

Team, an organization that, like its U.S. counterpart, tries to provide help in handling security incidents.

To Breton, the impact of Land Attack is clear in one way: "Perhaps this made some people realize they can be the target of such attacks. Some people need to wake up; this kind of attack shouldn't even happen."

For Cisco, whose routers and switches were vulnerable to land.c, the learning process has been painful.

Mike Quinn, Cisco's director of customer assurance who heads a security SWAT team, said Cisco personnel worked around the clock through Thanksgiving to isolate the problem, test equipment and work on fixes.

Cisco sent e-mail alerts to its customers and provided details about the situation on its Web site, though a few mistakes in testing land.c caused Cisco to say some switches were not vulnerable. Cisco quickly corrected the misstatements.

Last week, Cisco had finished creating fixes for most of its product line. Fortunately, Cisco firewalls apparently are not vulnerable to Land Attack.

Network managers who want to obtain the router and switch fixes can get them through the Cisco Connection Online. ■



## Justice Department

Continued from page 1

This statement cast doubt over whether Microsoft will be able to deliver Windows 98 on schedule in the second quarter of next year. The most widely touted new feature of Windows 98 is full integration between the browser and the operating system.

Microsoft officials downplayed this setback in their defense against two-month-old Justice Department charges that the company violated a 1995 consent decree. The decree barred Microsoft from conducting anticompetitive licensing practices, such as coupling Internet Explorer with its operating system.

"This is only a preliminary decision," said William H. Neukom, Microsoft's senior vice president for law and corporate affairs in a prepared statement. "We remain confident that continuing to innovate and integrate technologies is good for the software industry and good for consumers."

In Microsoft's favor, Judge Thomas Jackson did not hold the company in contempt of court, denying the Justice Department's request to impose fines of \$1 million per day on the company. Furthermore, the judge has not ruled out Microsoft's argument that the browser is an integrated part of the Windows operating system, as opposed to a separate product. "Microsoft has demonstrated, at the very least, the ambiguity of the term 'integrated product,'" Jackson wrote.

Windows 98 beta users looking forward to the full integration between Internet Explorer and Windows were disappointed by the preliminary ruling, fearing it will delay the corporate operating system rollouts they have planned for next year.

"We certainly see it as a setback. We want the simplicity of having one layer of client software from an end user and a management point of view," said Skip Taylor, group manager of remote access services at CompuServe, Inc. "It's a major convenience that all of our big corporate customers want."

NationsBanc-CRT in Chicago currently runs Netscape Communications Corp.'s Navigator on its 3,000 Windows 95 and NT desktop systems but is considering a switch to Internet Explorer when it upgrades its desktops next year.

"Having your browser also be your file manager is a user-friendly [approach] that could help simplify my life," said Rick Shope, manager of PC technology at NationsBanc. "If Microsoft is forced to rip all of that work out of Windows 98 and NT 5.0, I fear the delivery schedules will be thrown way off."

Microsoft officials contend they will move ahead with Windows 98 as planned until the final ruling is passed down. And the company will continue to allow any independent software vendor to create software that provides parallel functionality or enhances the existing functions of the operating system, whether it is a desk-

topshell or a browser.

But it is the methods Microsoft uses to integrate Internet Explorer into the operating system that rankles competitors such as Netscape.

Microsoft doesn't let you get rid of Internet Explorer very easily, Jim Barksdale, Netscape's president and CEO, told San Francisco's KRON-TV following the

ruling. "You can put Netscape's product on it. But IE will still keep popping up. 'You sure you don't want Internet Explorer? You sure? You sure?' After a while, most people who aren't big hackers ... give in. They shouldn't have the ability to tell you what you're going to use for these products."

Netscape was pleased with the court's

move against Microsoft. "We believe the order restores a level playing field and opens a new round of competition in the marketplace," said Peter Harter, global policy counsel at Netscape. ■

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## Carriers

Continued from page 1

backs: It requires two phone lines, and the call center agent cannot see what the caller is viewing.

Sprint Corp. recently ended a trial of a nearly identical service called Give Me a Call. Sprint officials claimed the test was successful, but they said they do not know when the service will be launched.

For its part, MCI Communications Corp. has failed to produce its Internet Call Center service, promised to its customers near

switched telephone network and the Internet. And the huge installed base of legacy terminal-to-host and desktop infrastructures in call centers, where most agents do not even have browsers, makes it slow going.

"The technology that supports this type of activity, both in the network and call center, is still in its infancy," said John Heiman, Sprint's director of business development for IP telephony.

### Priority status

In AT&T's and Sprint's schemes, selected corporate Web pages are outfitted with a

ogy (NW, Feb. 10, page 17). AT&T and Sprint product managers are skeptical this can be accomplished. They cited the difficulty of extending the H.323 standard for multimedia traffic over the Internet and the still-questionable quality of Internet voice connections.

Some PBXs and automatic call distributor vendors are developing premise-based gateways and Internet telephony server software to achieve single-line browsing and chat capabilities. But network-based services obviate the need for additional equipment. Indeed, AT&T's and Sprint's services are relatively easy to set up. "From a Web site owner's perspective, it's eight to 10 lines of HTML code that allows them to place the service on a Web page," Heiman said.

The two-line approach also acknowledges the fact that most call centers lack basic Web functionality. "Call center agents don't necessarily have access even to their own Web sites," Heiman said.

"It's been difficult to adapt to the browser world," said Jess Reed, assistant vice president of telecommunications at GEICO Insurance Corp., in Washington, D.C., and an early customer of AT&T interactiveAnswers. "You need to adopt TCP/IP, and that hasn't been common on the desktop [in call centers]."

AT&T also charges a significant premium for the service, over and above normal 800 inbound toll charges (see graphic). By contrast, in its test Sprint did not charge any specific fees for Give Me a Call.

But Sprint did enforce its basic tariff rates of 15 cents per minute for inbound calls terminating at the call center on a dedicated access line, and 18 cents per minute for switched termination. As a result, users could not apply that volume to their negotiated 800/888 discounts, which typically bring inbound tolls to 6 to 12 cents per minute for large users. Sprint has not yet determined what the prices will be for Give Me a Call when it is rolled out, Heiman said.

Another problem: Unlike older carrier network-based automated transaction services, the callee is liable for the higher fees whether or not the transaction results in a sale. For example, AT&T's IVS Express service, which enables consumers to dial an interactive voice response unit to order products during off hours, charges a fee only if a purchase is made.

By contrast, the Web-based interactiveAnswers charges a \$1.95 minimum as soon as the

option immediately doubled the closure rate.

Reed conceded the system is so rudimentary that even if the prospect has partially completed the insurance questionnaire, the call center agent has to start from scratch. For prospects who find it frustrating that the agent cannot see the partially completed document, GEICO offers an alternative in which the prospect can complete the questionnaire, submit it by e-mail and receive an e-mail response in 24 to 48 hours, Reed said.

AT&T does offer an enhanced version of

call center accepts the call. Because of the loose connection between the online session and the call to the call center, "We can't tell whether or not a sale is made," explained Tony Tomae, AT&T's marketing director for Internet telephony services. AT&T officials added that they so far have been unable to add a once-promised Web interface to IVS Express.

Tomae conceded that the rate structure puts a crimp on the type of users who might employ interactiveAnswers because the potential revenue stream must justify the extra expenditure. "You probably wouldn't use this service to purchase a hammer from Sears," Tomae said.

Indeed, many network managers who think they can make the economics work are pushing hard for Internet call center integration. And some hardy pioneers already have proven out the concept.

For example, when GEICO first put its insurance questionnaires for prospective customers on the Web, Reed was startled to find the company was selling policies to fewer than 10% of those who started completing the online form. Sales to telephone inquiries run closer to 20% at GEICO, Reed said. Then GEICO signed up for AT&T's interactiveAnswers, and the call-me

interactiveAnswers that allows live agents to push a fixed number of static Web pages to callers after they establish the voice link.

For example, AT&T hosts a Web site in its network for Outrigger Hotels & Resorts. Outrigger has chosen about 30 pages of the site, each depicting one of its hotels in Hawaii, to push to customers who use the call-me option from the Web.

The agents activate the push feature by punching in a preset numerical code on their telephone keypads. That action triggers an instruction from the AT&T network switch to the hosted Web server to download the page to the customer's PC, a process that normally takes 10 to 15 seconds for users with an ordinary 28.8K bit/sec modem, according to Outrigger reservations director Phyllis Saffery.

But none of the carriers currently enables callers to hyperlink at will to other pages with the live agent following along. AT&T generally relies on the firm's Webmaster to preselect the push pages rather than giving agents the ability to choose the pages on the fly because "very few call centers are integrated with the Internet today," Tomae said. ■

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### TOUGH TIME GETTING GOING

Seven reasons why carriers' efforts to integrate Web commerce with classic 800 call centers are lagging:

- ▶ AT&T's and MCI's gateways between the telephone network and the Internet are proprietary.
- ▶ The H.323 standard for multimedia Internet traffic still generally requires extensions by vendors.
- ▶ Most call center agents outside of high-tech support lines do not have browsers on their desktops.
- ▶ High-volume transaction networks are largely based on OS/2 without TCP/IP stacks installed.
- ▶ Internet transaction fees charged by carriers can double or triple the cost of 800 or 888 toll charges.
- ▶ Users must determine where within their Web sites to place "call-me" options to avoid wasting live agent resources.
- ▶ Carrier reorganizations, mergers and personnel losses have drained energy from these projects.

the beginning of 1997. The service was to be based on its Vault technology, a proprietary telephone network-to-Internet gateway once slated to be adopted by MCI's former merger partner, British Telecommunications plc.

In its Internet policy paper released during the summer, MCI reiterated that it would launch Internet Call Center based on Vault during 1997. But spokespeople for the company now say they will have nothing ready to discuss until at least the end of the first quarter of 1998.

The problems customers are experiencing: Network managers and carrier executives cited continuing difficulty building gateways between the public

call-me button. Clicking on the button opens a dialog box asking shoppers to enter their phone number. An IP server in the carrier network uses that information to instruct a telephony switch to ring the consumer.

As soon as the consumer picks up, the switch places the equivalent of an inbound 800 call to a call center agent using standard 800 call-routing schemes — in AT&T's case, with priority status so the consumer does not have to wait for the agent to pick up.

Where AT&T's and Sprint's services require the consumer to have two phone lines — one for the Web connection and one for the voice call — MCI's Vault project promised one-line technol-

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## Great businesses from strategic acorns grow

**W**hen the great cathedrals and churches of England were built, the architects displayed a tremendous vision of the future. They knew that eventually the great beams that supported the roofs would need replacing. Their solution was to plant oaks in the vicinity of the site. This meant that 'round about the time new timbers would be needed — 50 years, give or take a decade — there would be the raw material, ready and waiting.

This kind of forward thinking, true strategic thinking, is alien to modern business IT culture.

Today, a five-year window for strategic planning is considered long term. In IT, a one-year window is the limit of comfort for most of us.

The big vendors, Microsoft, Oracle, Sun, Digital, IBM, etc., bear most of the guilt. They revise their architectures, preannounce vaporware and destabilize markets on a regular basis.

Now I'm the first to say that it is their right to do so. We've got a free market economy and just as we vigorously defend the First Amendment, so must we fight for the freedom of the market. But the big vendors, and most notably Microsoft, should start to realize that the long-term vitality of the computer business is their responsibility.

Microsoft often is criticized for allowing small companies to develop new products and technologies and then either buying them up or duplicating their work and putting the small company out of business. While there is nothing illegal about these practices, there are two issues: Is it ethical, and is it good forward thinking?

The ethics issue is simple. While you may be able to do something legally, the consequences to other people may be unfair. And fairness in business is important. Being fair is not a matter of generosity — being fair because you can — it's an attribute of maturity — being fair because it is the right thing to do. The killer instinct is necessary when you're young, hungry and insecure, but when you've grown up,

restraint is appropriate.

Microsoft has grown up and is in a position of incredible power. Consequently, it is attracting a degree of scrutiny that I'm sure it would rather avoid if it could. But while the Department of Justice is flailing around to build an antitrust case, I believe most people who would like to see Micro-

soft reined in are really more concerned about issues of ethics than anything else — they want to see Microsoft be fair.

And being fair requires forward thinking. Consider how Microsoft has become the bane of developers because of its habit of revising APIs and making backward-compatibility harder

than it should be. Good forward thinking would dictate making the foundations of the industry consistent *for a decade or more*.

This kind of stability would allow the market to expand, allow more players in and more competition and, in short, create a bigger pie for more people to share. Trying to force this by allowing the Department of Justice to "have at" Microsoft (or anyone else) is the wrong way to go.

The right way is for Microsoft and the other big players to moderate themselves, to voluntarily curb their acquisitive appetites. It would be a bold thing to do, to essentially give away advantage. But ultimately it would build bigger, stronger, richer markets that would ensure their long-term stability and profits.

Curiously, Bill Gates once tried to persuade Apple to broaden its horizons by licensing the Mac OS to create a bigger market (see "They Coulda Been a Contender," *Wired*, November 1997). This was exactly the sort of mature strategy that Microsoft should be exercising today.

What I am suggesting is that these vendors, Microsoft in particular, should plan for the long-term good of their businesses. Let's see them plant some digital oak trees.

Send landscaping plans to [nwcolumn@gibbs.com](mailto:nwcolumn@gibbs.com) or (800) 622-1108, Ext. 7504.



Mark Gibbs



## 'NET BUZZ

The latest on the Internet/intranet industry

By Chris Nerney

**KNOW THY ENEMY** In his 1996 book, Intel Corp. CEO Andy Grove argues that paranoia is an essential ingredient for success in the cutthroat business world, which is why you always see him count his fingers after shaking hands with Bill Gates.

But for IT managers concerned about the security of their networks, paranoia isn't enough. They also need to know the nature and extent of the various threats to their enterprises. Otherwise they are doomed to live in fear, doubt and, ultimately, unemployment. From there it's a short step to an appearance on the Montel Williams Show.

Fortunately, software vendor Symantec Corp. has unveiled its own book, an online encyclopedia of computer viruses with more than 10,000 descriptions. It's like a cyber version of the FBI's Most Wanted List, without the tattoos.

The encyclopedia details individual computer viruses, including what they do and what specific systems they attack, as well as known aliases and last reported whereabouts. Symantec, based in Cupertino, Calif., makes the popular Norton AntiVirus software. Its virus encyclopedia can be found at [www.symantec.com/avcenter/vinfodb.html](http://www.symantec.com/avcenter/vinfodb.html).

**STARBURST EXTENDS THE RUNWAY** IP multicast has generated lots of attention, though not much profit, in the past year. Proponents of the technology designed to save bandwidth say widespread deployment is about a year away — an eternity if you're a vendor trying to sell the stuff.

Commenting on the difficulties of staying in business while waiting for a nascent market to take off, one executive at an IP multicast start-up recently said, "At some point you run out of runway."

StarBurst Communications Corp., of Concord, Mass., has built more runway for itself by landing a third round of venture capital. The \$6.8 million cash infusion comes from a number of sources, including lead investor Amerindo Investment Advisors, Inc., of San Francisco and returning investors such as Greylock Management, of Boston, Integral Capital Partners, of Menlo Park, Calif., and Canaan Partners, of Rowayton, Conn.

The premise behind IP multicast is that you can vastly reduce server and network congestion by sending a single stream of traffic to many users.

While many IP multicast vendors are pushing the technology for delivering bandwidth-consuming multimedia applications, StarBurst is focusing on sending large data files to thousands of users simultaneously.

**PORTABILITY, PORTABILITY, PORTABILITY** In its dismissive response to Sun Microsystems, Inc.'s announcement last week of a product that will allow users to circumvent the limitations on Java built into Internet Explorer 4.0, Microsoft Corp. maintained that "performance is perhaps the single most important Java issue for customers and developers."

Well, performance certainly is important, and Java rightly has taken its knocks for failing to measure up in that category.

Microsoft, however, ignores a larger reality, and that is the powerful "write once, run anywhere" promise of Java technology. Cross-platform portability is what developers crave above all else.

Don't take our word for it, though. Just look at the results of a recent poll of thousands of developers by JavaWorld, an online publication.

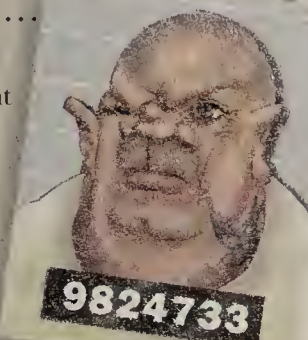
JavaWorld asked readers how much importance they place on the "write once, run anywhere" concept. The results should serve as a warning to any company in Redmond, Wash., trying to throw a monkey wrench into Java portability.

Of the 2,355 readers who responded, 90% said cross-platform portability was extremely important. Six percent said it was somewhat important, and only 2% said it was not important.

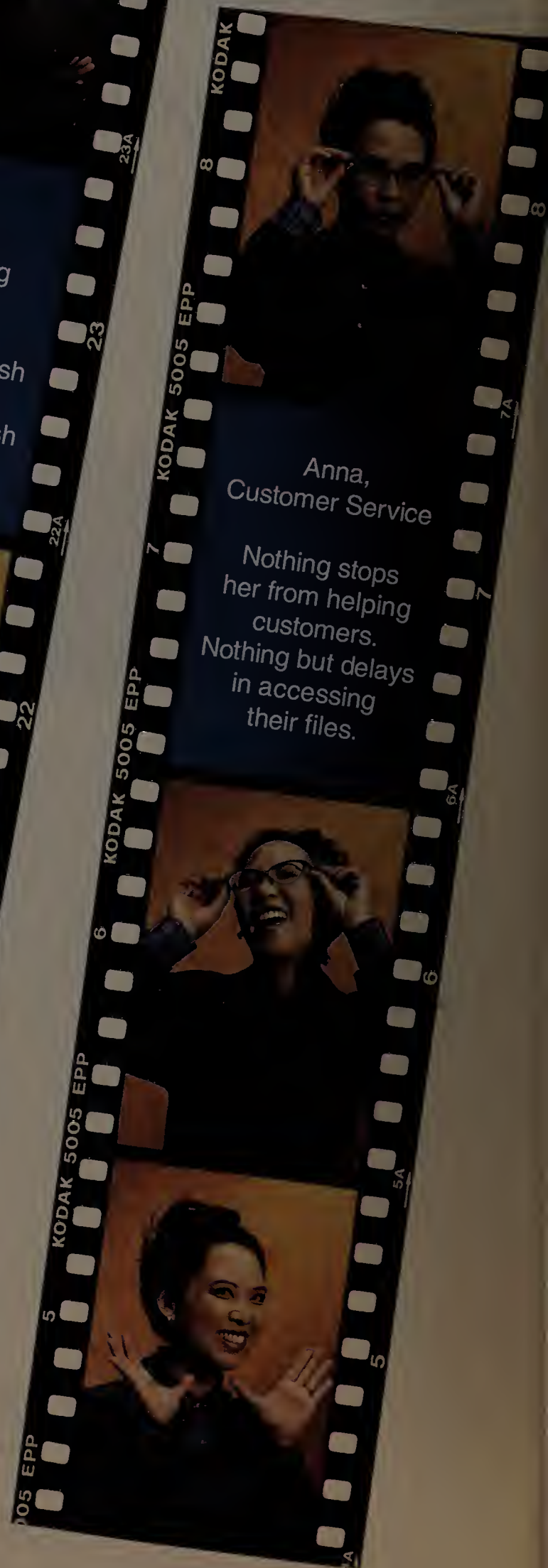
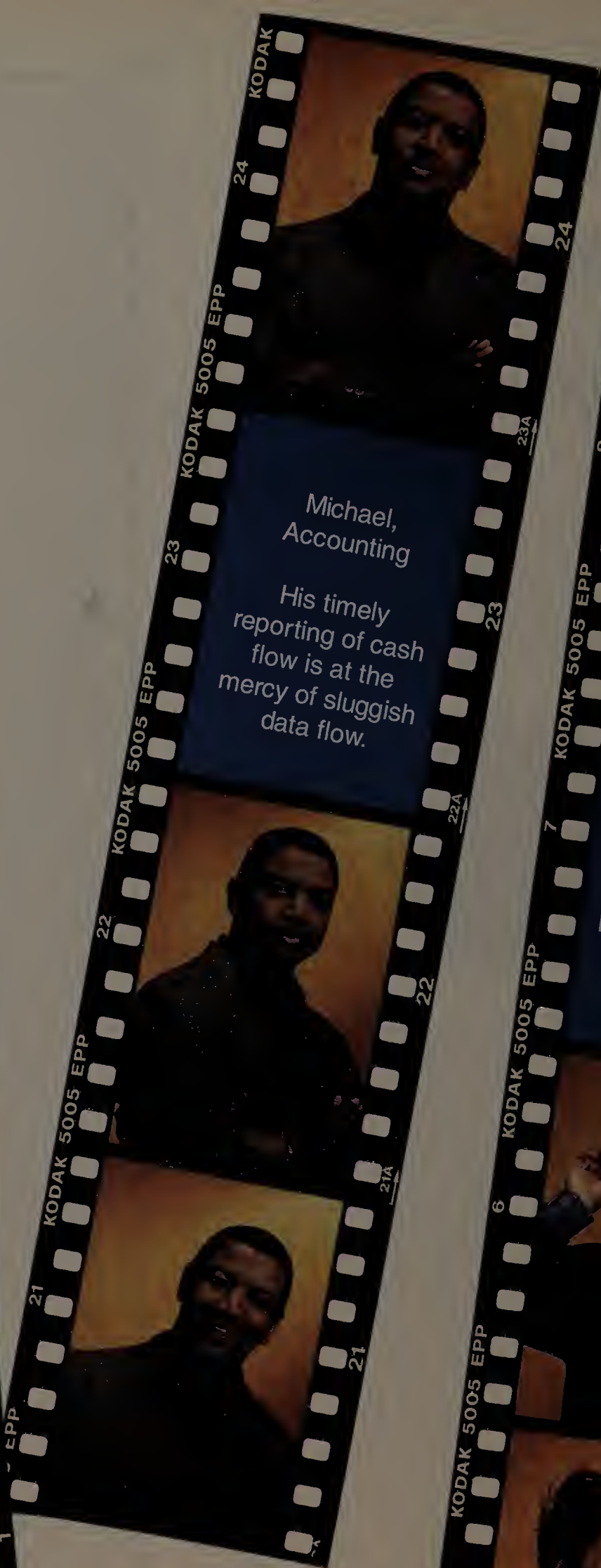
Java didn't fare quite as well in terms of its march toward the portability goal. Thirty-four percent of the respondents said they were not satisfied with the progress of cross-platform Java. Still, that leaves almost two-thirds who are satisfied, despite Microsoft's best efforts to derail the Java train.

You can find the JavaWorld poll at [nigeria.wpi.com/cgi-bin/gwpoll/gwpoll](http://nigeria.wpi.com/cgi-bin/gwpoll/gwpoll).

Time's running out for your holiday submissions to 'Net Buzz. We'd hate to see you end up with coal in your stocking, so send us your best Internet- and intranet-related news. Contact Chris Nerney at (508) 820-7451 or [cnery@nw.com](mailto:cnery@nw.com).









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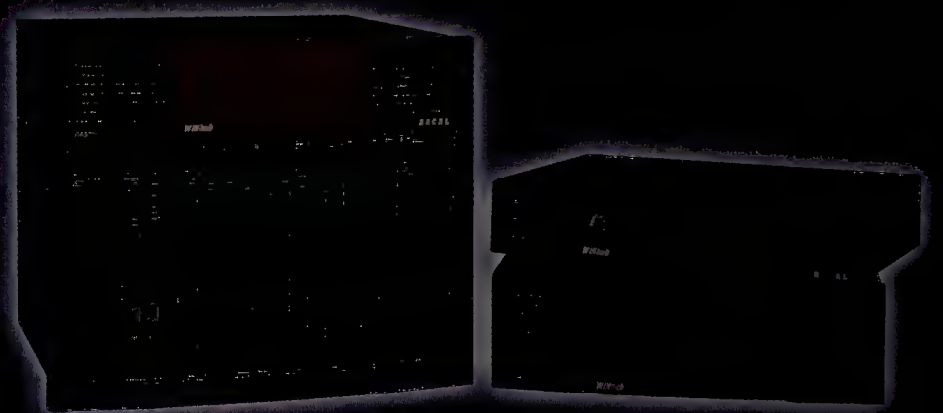
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